Accounting

Environmental management accounting for corporate sustainability: A case from a Sri Lankan automobile company

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Abstract

Environment is one of the crucial areas in today's corporate social responsibility. In order to sustain within the competitive business world, most of the global corporate entities are incorporating the environmental element in their business operations. Hence the purpose of this study is to identify the contribution of Environmental Management Accounting (EMA) for corporate sustainability. The concept was originally developed in early 1990's with the importance placed on accounting for sustainable development. So, EMA is a new system in accounting and management which assesses costs and benefits rendered by the eco system to a business concern. Qualitative methodology is adopted in this study which includes interviews and document reviews as methods of data collection. Through this study the researcher has deeply concentrated on exploring the concept of EMA, its practices and disclosures in a Sri Lankan Automobile company. The study summarized from the review findings that EMA is a vital issue for sustainable development. This will provide entrepreneurs and business managers the insights for future to implement or further develop EMA practices, as in Sri Lankan context, only a very few are properly following such practices.

Keywords: Environmental Management Accounting; Organizational Change; Sustainability Development

1. Introduction

Increased public concern on environmental issues during the recent years has resulted in enhancing the social accountability of business organizations through the disclosure of environmental information. With the increased community attention, corporate stakeholders have demanded more information relating to the impact of firms' activities on society besides the economic activities (Khan, Halabi, & Samy, 2009). Accordingly, environmental concern have become a highly influential factor to businesses worldwide and Institute of Directors in South Africa (2002) mentioned that due to the recognition of the increasing importance placed on non-financial issues worldwide, companies are under pressure for reporting social activities apart from reporting purely financial issues. Consequently, the integration of accounting with management tools and increased concern on the environment and various

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types of environmentally friendly practices has given rise to a body of accounting practices referred to as EMA. Bennett, Bouma and Walter (2002) states that despite the lack of a definite boundary or a proper definition, EMA has emerged as an interface between management accounting and environmental management. The term EMA emerges under the broad concept of CSR, and Ofori and Hinson (2007) illustrated that the CSR activities has grown remarkably in recent years and the CSR issue is now being integrated into all aspects of business operations all over the world. EMA, being an integral part of business operations, companies began to disclose environmental information as they realized that such practices may add value to their companies. In response, companies have developed environmental management and accounting systems and have increased their social and environmental disclosure practices (Larrinaga, Carrasco, Caro, Correa, & Paez, 2001).

In the global context, especially in Europe, organizations are under increasing pressure to take their social and environmental responsibilities in addition to their economic responsibilities (Wingard, 2001). Failure to respond to the pressure could result in legal action, bad publicity, loss of investor confidence and the wrath of the local community (Fuller et al. as cited in Wingard, 2001). According to Fuller et al. (cited by Wingard, 2001) the incompatibility to comply with environmental management practices would result in certain disadvantages to business organizations as they focus their attempts not purely on environmental perspective, but broadly on sustainability. Hence a separate area called sustainability is added which includes the broad areas of economic, environmental and social. Accordingly, this concept captures different levels such as individual, organizational, community and national or international.

Meanwhile, the concept of Sustainability Development (SD) came into prominence in the 1980s and was embraced by most countries as an appropriate form of development. SD recognizes that present patterns of consumption of natural resources are not sustainable and that more benign forms of development are needed (Herath, 2005). Dalal-Clayton and Bass (2002) and Cole (2003) offer a comprehensive list of sustainability reporting guidelines, with their advantages and disadvantages. The most widely used guidelines include: ISO 14000 series (ISO 14031, Environmental Management- Environmental performance evaluation guidelines) (International Organization for Standardization [ISO], 2013) and Eco-Management and Audit Scheme; Social Accountability 8000 Standard (Social Accountability International, 2007); and the Sustainability Guidelines (Global Reporting Initiative, 2006). The application of sustainable practices generates deeply ecological and restorative business models. It is a more challenging approach and incorporates with ecology and equity and is more strategic with long term orientation. Sustainability is directly linked to accountability and transparency of business organizations and hence is better to develop a path to measure and disclose environmental related information. Many Sri Lankan companies are practicing such reporting procedures although it is not wholly mandatory in Sri Lanka. Especially the industries which operates environmental sensitive core business functions such as oil and petrochemicals, mining and minerals, cement and steel have a direct impact on the physical environment as the inputs used by them may deplete the natural resources and products or emissions from the operational process are more likely to degrade the environment in the form of air pollution, sound pollution, water pollution, soil pollution and land pollution.

Under such a context, Gunarathne and Lee (2015) identified the development and implementation of EMA and environmental management practices at the hotel sector in Sri Lanka. It focuses on EMA as a management accounting tool used specifically to make internal business decisions. They observed that the hotel had reinvigorated some of its environmental management and EMA practices in an urgent, cost saving bid when faced with financial crisis. Later, management developed selective practices over time into comprehensive practices that are integrated into their day to day management process and the development stages of EMA reflected how the hotel moved from a survival phase to an integration phase. Having improvements over above study this paper expands by not totally focusing on internal costs and internal decision making, but also concentrates on the implementation of EMA, application of EMA tools and techniques in addressing the foremost research problem.

This paper aims to elaborate on the areas of EMA practices and contributions made by them in achieving the core strategic business objectives of a business enterprise. Under this broader theme, the identified specific objectives of the study are; to examine the changes to business processes after the implementation of EMA and the level of contribution to sustainability and to outline the areas of EMA and to investigate the specific EMA reporting practices.

2. Review of literature

2.1. Origin of environmental management accounting

Concerns about the sustainability and the protection of the natural environment have become an increasingly important issue amongst regulators, environmentalists and society in general in many countries. In this context, similarly to what has happened in private companies, over the last years, there has been a growing emphasis amongst public organizations on the need for addressing environmental management and, consequently, they have gradually tended to develop and implement management practices and tools aimed at improving their environmental performance by integrating environmental considerations in their management decision making processes (Ribeiro & Guzman, 2010).

Although there are different definitions for EMA, all of them have commonly defined EMA as a system that identifies, collects, analyses and uses a broad scope of financial and non- financial information which will help to minimize environmental costs and environmental impact of their activities, products and services enabling to improve the environmental and economic performance of a company and contribute towards a sustainable business (Schaltegger & Burritt, 2000; Deegan, 2003). Though it is difficult to establish a precise date when social and environmental accounting practice began, several authors agree that it comes from 1960's and 1970's (Gray & Bebbington, 2001; Parker, 2005), with further development during the 1980's (Adams & Zutshi, 2004). The concept of EMA is a development over environmental accounting where environmental information obtained through environmental accounting is used for internal decision making purposes and it has emerged as an interface between management accounting and environmental management (Bennett et al., 2002).

Parker (2000) identifies environmental costs as a main cost category that must be effectively managed and it is vital that organizations understand environmental costs as a potentially powerful management motivator to incorporate environmental variables into mainstream management thinking and decision making. EMA as a powerful management accounting tool has a broader scope which includes a wide array of accounting practices such as accounting for energy, material accounting, carbon accounting, environmental capital budgeting, activity based costing, environmental impact assessment, life cycle analysis and bio diversity accounting (Bennett & James, 1997). According to Gunarathne, Ranasinghe, and Peiris (2014), EMA is a dynamic area where there are new additions to the subject and new EMA practices are being introduced or existing management accounting practices are adopted to suit various environmental strategies pursued by the organizations.

2.2. Motivations for adopting environmental management accounting

According to Lee (2011), the limitations of conventional management accounting practices have been suggested as the main reason that restrains the adoption of EMA in following environmental strategies. Conventional accounting methods usually ignore the reporting of environmental impact. But it is vital for corporations to develop a method to deal with and account for environmental concerns in order to survive in the longer term. Accrual accounting based earnings figure does not take cognizance of issues of sustainability while financial figures of the balance sheet do not adequately provide for liabilities that might arise due to the firm's environmental activities (Negash, 2012). The Lack of accurate environmental measurement within the traditional accounting model means that environmental goods and services are often undervalued which contributes to their misuse and explanation (Swamy, 1994).

Therefore, the application of EMA provides different information for decision making which could reveal hidden opportunities, such as waste management processes, reduced energy and material consumption or opportunities for material recycling (Burritt, Hahn & Schaltegger, 2002). Adams and Zutshi (2004) suggest that improved corporate image and better relations with stakeholders can be experienced by organizations who apply EMA. Simply, common industrial benefits associated with EMA includes the ability to more accurately track and manage the use and flows of energy and materials, including pollution/waste volumes, types and fate; the ability to more accurately identify, estimate, allocate, and manage/reduce costs, particularly environmental types of costs; more accurate and comprehensive information for the measurement of performance, thus improving company image with stakeholders such as customers, local communities, employees, government and financial providers.

2.3. Sustainability development and environmental management accounting

Sustainable economy is achieved by the interaction of the three areas: social, economic and environmental and is characterized by eco-performance: meaning the best financial and environmental positioning. The eco-performer entity is monitoring the triple bottom line performance that equally requires the social, economic and environmental involvement (Marcinkowska, 2007). Gray (1992) revealed that the emergence of the concept of sustainable development which places considerable importance on the maintenance of natural resources, requiring mandatory inclusion of natural resource values has posed many challenges to those involved in accounting for the natural environment. Lange (2003) links the discussion on “sustainable development” to inter-generational altruism, and follows the world commission on environment and development or popularly referred to as Bruntland Commission (1987) which in turn states that sustainable development is meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.

In the global context there are several organizations, frameworks and guidance to assist corporates to deal with sustainability goals and they provide necessary guidelines on how to incorporate sustainability into reporting processes. Global Reporting Initiative (GRI) is such a network based organization which developed one of the most widely adopted sustainability reporting framework. Further researchers argue that if companies wish to demonstrate their contribution to and participate in environmentally sustainable development, they will have to bridge the world of environmental management with that of finance and economics (Herath, 2005). Schaltegger and Burritt (2018) argue the applicability of EMA as a sustainability tool where they state that the EMA incorporates strategic and ethical performance issues, considering whether it is better to look after the vulnerable society and the environment rather than economic rewards in the short and long run or to try and improve both, meaning that EMA incorporates strategic business issues into decisions. According to Schaltegger, Bennett, and Burritt (2006) EMA constitutes an important part of sustainability accounting as Sustainable Development has increasingly become part of the objectives of many corporates, leading to greater adoption and use of EMA systems. Zhang (2014) states that for the purpose of maintaining a sustainable global economic growth, every organization is required to be actively engaged in environmental activities such as reducing energy and resource costs, improving production efficiency and reducing compliance costs. Hence, at present EMA information is widely applied by managers as an internal management initiative.

2.4. Environmental management accounting and environmental costs

Jasch (2003) reveals the application of EMA in identifying environmental costs and she explains that the main problem of EMA is the lack of a standard definition of environmental costs. Furthermore, she elaborates EMA assists in identifying, assessing and allocating environmental costs where management can then identify opportunities for cost savings and to actually calculate cost savings of performed projects and investments. The main cost saving examples pays her attention is the replacement of toxic organic solvents with non-toxic substitutes where the replacement eliminates the cost of regulatory reporting, costs associated with handling hazardous waste and also other costs directly attributable to the usage of toxic materials. Accordingly, it is evident that EMA will enable an organization to experience cost savings through the better identification and management of environmental costs. Broadly environmental costs include both internal and external environmental costs. Internal environmental costs can have a direct financial impact whereas company is accountable to the external environmental cost (i.e., cost to society and the environment).

Dascalu, Caraiani, Lungu, Colceag, and Guse (2010) state that internal costs include conventional costs, hidden costs, contingent costs and image and relationship costs. External costs consist of environmental degradation costs and human impact costs. They further argue that environmental costs should be allocated directly to the relevant cost drivers, that is, to the activity that causes the costs on the conceptual basis of Activity Based Costing. ABC allows the allocation of overhead costs to the polluting activities and products that are determined by quantitative life cycle assessment procedures. According to the United Nations (2010) the identification, assessment, and accurate allocation of above mentioned environmental costs allows management to identify opportunities for cost savings.

2.5. EMA in international context

Chang (2013) conducted a study to address the issue of managing the major environmental costs from an accounting perspective in the context of Taiwanese higher education sector covering three Universities. The focus was to find out what practices are employed within the universities in managing the costs of electricity, water, paper and waste generation. It found that sample Universities were not applying EMA in managing the major environmental costs and they are lacking the motivations for adopting EMA. Deegan (2003) states that many of the EMA studies are in the manufacturing sector and a very few scholars have focused their attention on service organizations and it was found that managers in the service sector have very little concern and knowledge about the environmental costs incurred by them and as a result they have missed many cost saving opportunities. Deegan (2003) further argues that lack of EMA practices are sometimes due to deficiencies deriving from accounting for environmental costs. Wilmhurst and Frost (2000) identify how companies actually disclose and account for environmental concerns and they examined eleven reasons which motivate corporate entities to disclose and account environmental information. They found that most influential reason is to provide a true and fair view of operations. The second significant factor is to meet legal obligations with the satisfaction of due diligence concerns. All the reasons they examined were in line with their strategic objectives which ultimately supports corporate sustainability.

Accounting for sustainability incorporates the equity aspects of the paradigm of eco-justice. The approach firmly introduces the triple minimum requirements of profit, people and environment into the accounting function. In order to contribute to environmentally sustainable development, a company will have to satisfy all three conditions (Nilsson, Bjuggren, & Frostell, 1998). Similarly, Negash (2012) examines whether IFRS can be used for monitoring environmental degradation and he stated that the IFRS regime provides useful conceptual and practical frameworks for monitoring firms that are operating in environmentally sensitive industries. Qian, Burritt, and Chen (2015) identified the adoption of EMA in Chinese businesses for balancing the tensions between economic growth and environmental degradation. They found that, need to achieve economic growth which is environmentally benign as high economic growth for over last three decades, has created unprecedented environmental degradation.

3. Methodology

3.1 Research site and data collection

To achieve the aim of the study researcher has selected an organization which is operating in an environmental sensitive manner. It is referred to as DME PLC due to confidentiality and it is the nation's premier purveyor of automobiles and automobile solutions and has always been a cut above the rest when it comes to identifying the needs of the community. They always focus on their customers and are working for the social wellbeing. In their mission statement they present themselves as a corporate who is committed to being a partner of sustainable development which is reflected by the wordings "Create Value Responsibly". DME PLC's corporate strategy is geared towards sustainable entrepreneurship, or smart entrepreneurship, the kind which thrives on its surroundings and seeks to preserve those surroundings. They always strive to reinvent in themselves, to meet a forever evolving customer base and, in the process, to meet and sometimes even exceed expectations of that base enabling DME PLC to wade through 79 years of success.

After the preliminary discussions had on the organization the sample of interviewees were selected. The sample consisted of Director Finance, the Chief Accountant, the Executive – Stakeholder Interactions and Sustainability

Team. With the application of qualitative methodology, the researcher has applied interviews, observations and document analysis as data collection instruments. The idea of the prior scholars was that the combinations of multiple instruments in a single study strengthen the validity of the data that are obtained (Crescentini & Mainardi, 2009). Much of the data were gathered through interviews. Both a pilot study and a main study were conducted. All the data collected were separately examined and similar areas were identified as common subject matters. The raw data gathered were organized based on the research requirement and categorized according to the two main research questions.

3.2. Theoretical framework

Kurt Lewin's Change Management Model (1940) is employed as the theoretical framework in this study. This model explains the organizational change using the analogy of changing the shape of a block of ice. Lewin proposed the Change Management Model in the 1940's and his model became the first and most famous analysis of how organizations adapt and deal with change (Epstein & Roy, 2003; Schaltegger & Burritt, 2000). Similarly, time to time scholars have added some more features to the model according to the studies they undertook and have commented on the validity of the Lewin's Model (Schaltegger & Burrit, 2000; Epstein & Roy 2003). In this study the Lewin's Change Management Model is employed to explain the way in which organizational change towards improved accountability occurs and can lead to changes in activities, routines, employee morale and practices and management processes of DME PLC.

The concept of change management is familiar with most of the businesses and organizations which are vulnerable to change. But the way the organization manages the change could vary depending on the level of readiness and willingness to accept the change. Accordingly, the change process of DME PLC is respectively explained under the three stages Suggested by Lewin model (figure1) as unfreezing, changing, and refreezing.

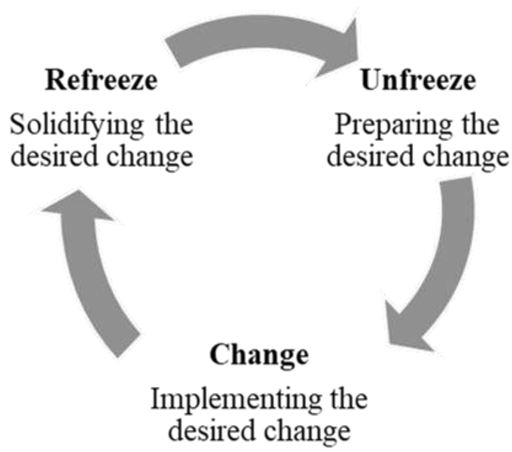

Figure 1: Kurt Lewin's change management model (Mulder, 2018)

4. Data presentation and discussion

4.1 DME PLC and the organizational change through EMA

The change process is backed by the change management model and based on the three main phases of change, findings of the study are separately elaborated. The first stage, unfreeze is about creating the motivation to change. According to the explanation provided by the chief accountant, DME PLC was not into any kind of environmental related reporting prior to 2001. The reason they introduced environmental reporting in 2001 was backed by the implementation of Environmental Management System (EMS) which was accredited by ISO 14001 (ISO, 2015) as environmental reporting is a part of the triple bottom line reporting. According to the findings of Gunarathne and Lee (2015), an entity could apply EMA as an internal management accounting tool and they clearly explain how an organization moves gradually from a survival phase to an integration phase. Similarly, as an initial step towards change, firstly a change oriented culture has to be developed within the organization.

Before implementing an eco-based corporate strategy and an eco-friendly organizational culture, the company set the goals and formulated the policies for the implementation of the environment related management accounting techniques. DME PLC was more towards environmental concerns from the beginning and was gradually turning into an eco-friendly business entity for a long period of time. The need for adopting environmental management techniques were backed by increasing pressure from global and regulatory bodies and one such influential factor was development of world sustainable development goals by United Nations. On the other side, DME PLC being a successful company, required to obtain a distinctive competency over others that distinguish themselves as a responsible eco-friendly corporate citizen compared to other businesses. Further they wanted to maximize shareholder’s wealth and cutting off costs as a way of reducing costs. The company identified environmental concerns as a means of reducing costs. As an initial step environmental related policies were established for the purpose of integrating environmental concerns into daily business processes. The company specifically aimed to achieve the following environmental objectives: save energy, fuel and water, avoid using polythene, maximize practices to reduce, reuse and recycle, reduce consumption of materials, spread the message, work together, be informed, get involved in environmental protection and promote proper waste segregation.

The chief accountant responsibly explained that they conducted number of workshops to make the employees aware of level of waste generation and has focused the attention of employees on rapid environmental degradation and its effect on sustainable development. Further in creating awareness within the society, special programs were arranged targeting the school and university children. One such example is the series of seminars conducted in 2010 on Mercedes-Benz’s Blue Efficiency Technology. Through the environmental

activities of the organization they strive to spread environmental awareness, encourage employees and other stakeholders to live by environmentally friendly, 'green' principles in the workplace and elsewhere. In explaining the individual's willingness to change, the chief accountant stated that:
"…Motivation is intrinsic to an individual and no one can motivate others to change. But can create the conditions, messages and environment that may influence people to want to change. Hence by highlighting the need for adopting EMA within the organization, it is possible to create a sense that a change is needed, we have a highly talented workforce and they are always ready to try new areas, where we stand today is due to change appreciating culture that we have developed throughout our journey…"

The second stage of Lewin's Change Management Model is "change" which aims at moving to a desired behavior. According to the Schein (2002) Lewin's "changing" phase involves learning new concepts, new meanings and new standards, imitation of and identification with role models and scanning for solutions and trial and error learning. Under this stage all the areas relating to the environment where company's attention needs to be given were identified and necessary actions were decided in managing water, waste, noise, atmospheric emissions, materials and energy and fuel. In managing these identified areas and overall environmental impact, DME PLC had formed four specific teams under "Go-Green" theme. It was simply an initial step that the company has taken and respective tasks had been assigned to each team. Team 01 was specifically for flood prevention, team 02 for electricity conservation, team 03 for waste management and team 04 for water conservation. DME PLC's main concerns on saving the energy sources have made the company to pay much attention in seeking for cost saving opportunities by focusing on electricity and other energy sources. Some of the management initiatives include use of natural light when planning new constructions and Green Buildings (DME 800) which have been certified into gold category by Leadership in Energy and Environmental Design. The reporting process of DME PLC was totally manual prior to introducing EMS and managing automated systems was a huge challenge for the workforce as they were used to manually process data.

The challenge they faced while dealing with the new system and EMA techniques was described by the chief accountant as follows:
"…Changing is not much easy. We have put massive efforts in overcoming the failures we faced during first two years after the implementation of EMS and EMA techniques. Those concepts were relatively new to us when we were working on the change process. However, we have created no of changes when implementing the EMS and failures and costs of change management are a common phenomenon for any organization, somehow we have managed it by interpreting the importance of the EMS and EMA techniques…"

Under change phase,it is required to empower action and as a way of empowering workforce, to put efforts into action. Line managers of DME PLC always provide day-to-day direction to operational employees. It is a kind of their management practice and provides lots of opportunities for employee involvement. The importance of trending management accounting techniques which are followed simultaneously with the EMS are continuously communicated to employees. The Director Finance summarized his opinion regarding the correct decision that they have taken in implementing new management accounting techniques:

"…Our company has an ISO 14001 certified EMS. It enables us to measure and monitor the impact of our operations on the environment which in turn leads to have suitable measures being put in place. Our EMS is guided by triple R concept; Reduce, Reuse and Recycle. We are guided by our EMS to generate lots of environmental accounting information which will be incorporated by us in making decisions and developing action plans as a part of our EMA techniques. Most of the times, EMS emphasizes environmental information to ensure the ISO requirements…"

The final stage of change management model is "refreezing" which is about anchoring the changes into culture. Refreezing provides a sense of stability which is necessary for creating the confidence from which to embark on the next, inevitable change. The company has developed several environmental policies and all the policies were published all around the organization to make it familiar with every single individual and to make it a part of their culture. What they believe is each and every single individual will contribute towards managing environment by making it a part of their work life. Similarly, DME PLC has developed 'I Pledge' program to encourage employees to 'live green' and carry the environmental ethic beyond the workplace and into their family and social life. Through these initiatives it is expected to keep everyone informed and supported, while developing ways to sustain the change. Additionally, for easy measurement and comparison of level of eco goal achievements, company has established some organizational specific key performance indicators by incorporating balance scorecard approach into their daily decision making process: climate change - carbon foot print tCO_2e (tons of Carbon Dioxide Emissions) per Rs.1 Mn. of group net turnover, energy - total energy consumption (1000 GJ), energy consumption (Giga joules) per employee (on average), water - total water consumption (m3), water recycle -ground water recycled and reused as a percentage of ground water consumption, waste - total hazardous waste sent for recycling/reusing (Kg), total hazardous waste sent for recycling/reusing (Litres) and environmental non-compliance - action taken by the central environmental authority for non- compliance.

4.2. The specific areas of environmental management accounting

The areas of EMA are categorized based on the material impact on the environment generated by the value creation activities of DME PLC. Under the EMS of the company, six main pillars are identified as areas that have to be managed and accounted for: management of atmospheric emissions and climate change, noise management, energy and fuel management, water management, material management and waste management. Additionally, Bennett and James (1997) also commented that the scope of EMA extends over diverse reporting areas including the major aspects of energy, material accounting, carbon accounting and bio diversity accounting. Consequently, Frost and Toh (1998) analyzed the environmental accounting and management systems of 76 Australian public entities and they argue that many environmental accounting procedures had been developed to provide information only on the costs related to waste management and energy use. The environmental strategy of the company is designed with two key principles and those two principles are center to their six areas. The first principle is to minimize the impact of company's operations on the physical environment and the second policy is to inspire the employees and the society to internalize the values of conservation and commit to minimizing the impact on the environment which is a more participative approach.

Management of atmospheric emissions and climate change

Climate change is concerned with changing atmosphere temperature or a change in global or regional climate patterns, simply referred to as global warming. A more specific attempt by the company in this regard is, they continuously update their policies towards managing Greenhouse Gases and monitor carbon footprint. The performance relating to carbon foot print is measured as a ratio between tons of Carbon Dioxide Emissions per Rs. 01Mn. of turn over where the intention is to identify the linear relationship between turn over and the carbon foot print. Improper management of waste causes Greenhouse gas emissions and hence waste need to be managed in a responsible manner. In DME PLC a streamlined waste disposal system is established which saves GHG emissions and reduces the amount of carbon footprint for the coming years. The idea of the chief executive who is in charge of stakeholder interactions, regarding the company's efforts on minimizing emissions was:
"…All the DME Group's own vehicles and rented vehicles subject to emission tests for compliance with national standards. But, our vehicles are also required to comply with our own standards which are more stringent than national standards…"

The company uses WBCSD/WRI Greenhouse Gas Protocol's Corporate Standard (revised edition) to compare its carbon foot print and GHG emissions. The targets established by DME PLC in reducing the amount of GHG emissions are relatively small operational goals where every individual can contribute to it through their day today activities. The chief accountant commented that:
"…We are given individual targets to reduce the consumption of A4. Per day, we have a target and at the end of the day we check the amount of paper we used with the target we were given. If there are variances, following day we consume only the balance remaining per day after setting off extra consumption made previously, consumption of A4 sheets result in increased amounts of GHG emissions…"

The company is using CFC free gases in vehicles and air conditioning machines and it is guaranteed that the company's activities do not result in ozone depleting emissions. All these concerns are captured in the reporting process and the company accounts for these activities with the support of EMS.

Management of noise

Accounting for noise management deals with identifying costs associated with noise generation and taking controls to mitigate or reduce the impact of noise. Within DME PLC, noise levels are measured with the help of an independent third party who is accredited by the Central Environmental Authority. The measured figures are properly accounted and compared overtime to identify how efficiently the company is managing noise. The level of impact created on the environment by interrupting noise need to be categorized and compared to check whether noise emissions are well below the legal and statutory allowances provided by regulatory bodies. If any variations are found quick actions are taken. Hence management accounting plays a major role in identifying and accounting noise emissions.

Management of energy and fuel consumption

As the company is into motor engineering the main sources of energy are electricity, diesel, petrol and LP gas. Meanwhile alternative energy sources are used in some of the business units with the intention of reducing over dependence on scarce energy sources. The usage of diesel for vehicles, diesel for generators, petrol for vehicles, LP gas and electricity are measured and accounted and finally arrive at total energy consumption during a year. The comparative figures are presented in management reports to be compared against previous years and there they identify the percentage of change in energy consumption from the immediate previous year. Further to support management decision making 'energy intensity ratio' is calculated.

The annual report provides strong evidences on the efficient management of energy and fuel within DME PLC:
"…Our premises and service workshops meet with the standards stipulated by local authorities and the Central Environment Authority (CEA). Our endeavor is to move beyond these minimum standards and further improve our ecological foot print. Bosch Diesel Centre and DME 800 are two Green Buildings which have been certified into gold category by Leadership in Energy and Environmental Design (LEED). DME 800 with more than 16,000 square meters of built area gives an energy saving of 25% compared to a traditional building…"

In explaining the value generated by EMA information the chief accountant stated that:
"… Previously we were not into those energy measures, but the implementation of EMA has enabled us in saving our energy sources and

planning our business to extend over future, in ways that secure of energy sources. The most specific thing here is that we have identified some organization specific energy saving initiatives like usage of CFL and LED bulbs, air conditioning rate specifications, computers to revert to standby within five minutes idling period and maximum use of natural light…”
Similarly, the company conducts energy diagnosis and audits where they are accredited to carry those audits by Sri Lanka Sustainable Energy Authority.

Management of water

Water is a key input in their operational process and when water is used to wash and repair motor vehicles, it gets mixed with engine oil, chemicals and mud. There is a separate process to recycle the polluted water and the company’s commitment to water recycling is evident from the fact that the DME PLC has been continuously achieving the sustainability objective relating to reuse of water. The National Water Supply and ground water are used for the company’s operations and have water recycling and purification plants in Siyambalape and Kurunegala. The company has designed a waste management process to eliminate the risk of discharging untreated water into any public area or sewage system which could create negative externalities. The process followed is clearly explained in the annual report of DME PLC as follows:
“…Waste water from all our workshops passes through oil separators and is monitored to ascertain pH levels on a daily basis, thus ensuring compliance with legal limits. Random samples of recycled water are also collected by a Central Environmental Authority approved third party, to monitor pH Value and Chemical Oxygen Demand (COD). DME’s biochemical oxygen demand, total suspended solids and oil/grease content were all found to be well below the tolerance levels demanded by the Central Environmental Authority…”
The company divides total water consumption and reuse into four major areas namely municipal water, ground water and rain water harvesting. Finally, they calculate and compare water usage, reused water and reused percentage annually. Based on information necessary actions are taken and relevant management plans are developed for upcoming years. In discharging water three main methods are followed including recycle and reuse, recycle and discharge to municipal drainage, treat and discharge.

Management of waste and materials

DME PLC’s waste management strategies are based on 3R concept of Reduce, Reuse and Recycle where they have developed a waste management hierarchy in identifying the order of managing waste based on the relative significance given to each waste item. The first layer of the hierarchy deals with waste items which are reusable and usage of those items could be controlled or minimized. Items such as A4 papers, cotton waste, waste oil and food waste are identified under this category. In explaining the process chief accountant stated that:

"…We are given daily targets to reduce our usage of A4 sheets. Also for food items we have taken some steps for proper disposing. What we follow is very easy, simply you have to put food items into relevant bins, food separately and wrapping papers separately…"

The second layer consists of recyclable waste items such as cardboard, polythene, plastic, oil filters, metal scrap, glass and tyres. The third layer includes contaminated paper, polythene, cotton waste, paint tins and sludge. All the items which come under third layer are destroyed by burning which is called 'incineration'. The process was well explained by the executive-stakeholder interaction as follows:

"... We are very much careful when it comes to incineration and we have outsourced the process into a third party cement manufacturer, Holcim. Holcim is the largest third party organization in incinerating waste. We spent a huge amount for this; sometimes the cost exceeds all the benefits we obtained through the utilization of these items. Our intention is not always our benefit, but to benefit the entire society. If the items such as cotton waste and sludge are not properly disposed, it creates huge negative environmental impact than any item, so the only option is to incinerate. Even the burning emission is so harmful to be breathed. Holcim has an underground pipe in minimizing the effect on the environment…"

The items of the layer upon last layer can be composed and composting is the option followed by DME PLC in managing the items like garden waste. The last layer consists of waste items including windscreen, paint booth filters and food contaminated polythene. The company highlights two major waste categories and two separate treatments for the items. Two categories include non-hazardous solid waste management and hazardous waste management. The management of non-hazardous solid waste is controlled through various initiatives launched within the organization. One simple method followed is, company has a colour coded bin system to manage the food waste and the collected food waste is given to an external party for animal feeding. The method of disposing hazardous waste is decided based on the type of material and level of impact on the environment generated by waste outputs.

4.3 EMA and strategic business leadership of DME PLC

This study reveals how an organization can implement eco management approaches from the very beginning and how environmental aspect can be integrated into business process overtime. It is proven that the integration of EMA into the organizational strategy enables a company to achieve corporate sustainability.

DME PLC and sustainable development

DME PLC being a green initiator contributes to sustainable development mainly through its efforts towards preserving the environment. They as a company always align their corporate goals with the sustainable development

goals which were introduced by United Nations to achieve a better and more sustainable future for the whole world. With small improvements every year, DME PLC adds multiple goals in aligning their company's plans with the global commitments. How they monitor their progress is, using company indicators: national and international indicators. In explaining company's commitment, the executive stakeholder interactions stated that:
"…Being responsible is a part of our business philosophy, our aim is to establish a company framework for achieving the 17 sustainable development goals and under environmental aspect we cover, clean water and sanitation, affordable and clean energy, responsible production and consumption, climate action, life below water and life on land. We are a signatory participant of UN Global Compact since 2001 and from Sri Lanka, there are 35 participating institutions. Communication On Progress (COP) by our company is due on coming January 2019, where we annually detail our compliance with ten principles…"

The extent to which the company is complying with sustainable development goals is identified separately for each area by different mechanisms, especially through EMS which is accredited by the latest version of ISO 14001:2015, through ensuring responsible consumption of resources, minimizing impacts and complying with regulations throughout the lifecycle of the company's value chain. The application of EMA, as a discipline has enabled the company in improving the environmental performance and has become an influential factor in integrating best management accounting thinking philosophies which is vital in complying with global goals for sustainable development.

Competitive triangle and sustainable competitive advantage

DME PLC was able to attain sustainable competitive advantages through the implementation of EMA. The concept of sustainable competitive advantage is a part of their corporate strategy and being a responsible corporate citizen has paved the way towards the attainment of competitive position in the market. In DME PLC they have 'Differentiation, Collaboration and Diversification' among which 'differentiation' is achieved mainly through the concerns placed on environment and sustainable development. There it is possible to arrive at a competitive triangle that connects the aspiration and purposes into the corporate strategy.

The orientation towards sustainability has made their company to gain a competitive position at the market place. Their belief is that people are more into 'go green' concept and as a result, were able to distinct themselves in the minds of customers as a brand that carries green concept and sustainability as the core strategic imperative. Further as a group, they have realized the blooming results of having management accounting tools like EMA and while discussing on the company's future plans, they explained their targets and objectives for improving the existing corporate practices. A separate sustainability team for implementing such developments has been created. The relationship between the management of impacts and its contribution to the strategic objectives is clear cut. The aspects of the value creation process that generate material impacts to the environment include discharges, emissions, product stewardship, subcontractors work and compliance with statutory and regulatory requirements. The value created through the impact management is further strengthen via voluntary initiatives on environmental conservation which in turn generates a competitive advantage to the company. It is like a continuous cycle and there is no any visible endpoint in the value creation process. As a consequence, the relationships are much complicated and sustainability is identified to be no longer a concept, but a business initiative.

5. Conclusion

In this study DME PLC was able to manage its usage of natural resources and was able to implement precautionary environmental initiatives as a result of introducing measures in identifying resource usage, degradation and waste generation through the information derived from EMA techniques. It is observable that each six environmental management areas of DME PLC have positively impacted on the business process and overtime they were able to achieve number of accolades for being a green enterprise.

Overall findings indicate that the implementation of EMA is not an overnight process, it requires time and resources. For a corporation to be a sustainable enterprise, it has to be economically stable, socially responsible and environmentally friendly. DME PLC has their organization specific impact management areas including economic impact, environmental impact and social impact ,capturing the triple bottom line. All the three areas need to be balanced in order to contribute towards sustainability. Environmental aspect being a major part of sustainability needs to be better managed and there EMA plays a major role in assisting the company in measuring the level of environmental impact created from their operations. The overall use and the effectiveness of the application of EMA is directly linked with the environmental goals aspired to be reached by the management. According to Schaltegger and Burritt (2001), such goals include identifying environmental improvement opportunities, prioritizing environmental actions and measures, environmental differentiation in product pricing, mix and development decisions, transparency about environmentally relevant corporate activities, meeting the claims and information demands of critical environmental stakeholders to ensure resource provision and access and finally justifying environmental management division and environmental protection measures.

The study found several limitations during the research period which sometimes had an impact on the research. A main concern was that the study was conducted in 2018 and at the time study is being conducted, EMA and sustainability reporting has become a usual business practice of DME PLC. Hence the situation during past and now could vary and although people are capable of recalling past, some facts may subject to variations. In this study, data triangulation is employed to avoid such mismatches in data, but still significant inherent facts that are out of control do exist such as ‘selective memory', 'telescoping' (recalling events that occurred at one time as if they occurred at another time) and 'attribution' which attributes positive outcomes to one's agency and pass negative events to other parties. Other than above basic drawbacks, limitations associated with qualitative research due to its nature such as generalizability of findings and subjective, bias views of people, this study provides detailed description of validity and capability of EMA application in private sector business enterprises. As further improvements to this study, future researchers can investigate the level of application of EMA in public sector entities. Although private sector companies are dynamic and quickly capture the changes, in public sector it is rare to see change implementation. It is mainly due to very much centralized decision making in public sector and tall hierarchies, with not precisely defined goals. Additionally, researchers can carry out multiple case studies by contrasting among entities who adopt EMA and entities that do not follow EMA, along different business sectors of different sizes and locations, there researchers can arrive at exact merits associated with EMA implementation. Such further research opportunities would overcome the lack of comparability of the single case study method as in the current scenario.

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Internal control effectiveness on performance of private commercial banks in Sri Lanka

Kumari K.A.H.M.[1]

Abstract

Internal control system is an essential component in an every organization to achieve their management objectives. Specially in banking organizations internal control are very crucial to determine how banks achieve their performance within the competitive environment. Therefore this study reveals the impact of internal controls on organizational performance of Private commercial banks in Central province of Sri Lanka that could make important contribution to management field in decision making. For this purpose, five hypotheses were proposed and tested. In this study, internal control is measured by the five components: control environment, control activities, risk assessment, information and communication, and monitoring as per the COSO (Committee of Sponsoring Organizations of the tread way commission) model. Whereas organization performance is measured through four dimensions: service quality, employee satisfaction, customer satisfaction and financial performance. Sample size comprises of 70 respondents representing executive level employees from private commercial banks in Central province. Sample was selected using stratifiedd sampling technique. Data was collected through questionnaire and analyzed using the Statistical Package for Social Scientists (SPSS) version 21. According to correlation analysis results revealed that internal Controls have a significant positive relationship with organizational performance of private commercial banks in central province. Also this study recommended that control environment, risk assessment, Information & communication and monitoring should be enhanced as it was founded that these variables predictors of the organizational performance of Private commercial banks in central province in accordance with multiple regression results.

Keywords: Internal controls; Organizational Performance; Private Commercial Banks

1. Introduction

The Banking sector in Sri Lanka plays a major role within the Sri Lankan financial system as the major liquidity providers for the economy while transforming the risk characteristics of their assets. Committee of Sponsoring Organizations of tread way commission (COSO) developed a model for appraising internal controls. This model has been identified as the generally accepted framework for internal control and is widely known as the definitive

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standard against which organizations measure the effectiveness of their systems of internal control. Due to the complexity of banking transactions and number of customers engaged in baking transactions banks can create vulnerable transactions of systematic nature. Therefore there should be a soundness of bank transactions which contributes towards maintaining stability in financial system in Sri Lanka. If the banking sector collapsed, the whole economy would face to critical problem. Due to the financial downturn banking sector all across the globe has become vulnerable to the fraudulent actions. Increasing uncertainties and development of technology have rushed the banking organizations to look for the appropriate internal measures to transform their business organization into risk and uncertainty proof (Bayyoud & Sayyad, 2015). In international context Bank of China, China's third largest lender announced that several employees of one of the Bank's branch in northeast China are being investigated by police over the alleged embezzlement of 10 million Yuan in client deposit (China Daily, 2012).

Sri Lanka CID investigates Rs.40 million fraud at commercial bank by altering data throgh fake debit card (News Desk, 29/5/2015). Further, Investigtion by Centrel Bank of Sri Lnka revealed that leak of customer data at HNB has found and it was caused by internal lapses (Economy Next, 2017). interim financial released to CSE shows that internal fraud cost of NTB amounting to to Rs.365 million during first quarter of operations ended in 31/3/2015 (Daily mirror,6/2/2013). It is clear that frauds and mistakes due to carelessness, personal distractions, unclear instructions of management, and also collation have been occurred in Private banks in Sri Lanka. Though the internal as well as local Banks uncounted by frauds they also may be have internal control, internal audit as well as statutory audits. But these had been unable to prevent due to that it have been affected on their operations, quality of service, customer satisfaction, market share, investments, attraction of investors, annual return, growth, return to shareholders finally to the reputation which comes under organizational performance. The need for the internal control system in the organizatios ,specially Banks cant be undermined due to the fact that the Banking sector which has a cruicial role to play in the economic instability,slow growth in real economic activities,corruption and risk of fraud (Olatunji, 2009).

According to the background of the study, it emphasizes the importance of internal control in the Bank's performance because banks contribute higher amount to the economic stability of Sri Lanka through both State and private banks in Sri Lanka. If Bank performance increases it effect to the economic growth by enhancing GDP. According to Gunawardhana (2014) shows the increasing of frauds within whole Banking system with the computerization of Bank operations has been increase gradually. The most serious problem hampering the smooth operation in public and private sectors at all the levels has been fraud, errors, defalcations, mismanagement and abuse of Banks. Fraud is really eating deep into the system and that any organization with a weak internal control system, is dangerously exposed to fraud. Control environment its enable to reducing the level fraudulent activities within organizational operation (Ayagre, Gyamerah, & Nartey, 2014) Internal control systems are put in place to ensure safe custody of all assets, detect and safeguard against probable frauds (Magu & Kibati, 2016) Even though every Bank tie with regulations and implement internal control within Bank how these kind of fraudulent activities can be happen which directly effect on Bank performance and it's a question whether there is an impact of internal control on organizational performance of banks.

Most of the prior studies in performance intention were mainly focusing on managerial employees as well as non-managerial employees there are few researchers have found on direct impact of internal control on organizational performance (Ayom, 2013; Dineshkumar & Kogulacumar, 2015; Douglas, 2012; Ilias, Abdulatiff, & Mohamed, 2016; Mahadeen, Al-Dmour, Beidat, & Tarhini, 2016; Shanmugam, Haat, & Ali, 2012) with exception to the Dineshkumar and Kogulacumar (2015) research which directly research on that relationship in Sri Lanka for the Tele communication industry above studies were oversea based. But there is no any research conducted on banking industry and no any research to public sector to test the direct impact between internal control and organizational performance as a whole therefor this research is give valuable base for future researchers. And also they is no research conducted to the central province of Sri Lanka regarding this research area. Therefor there is a research gap exist in Sri Lankan context as well as in International context.

When considering about dimensions those affecting to Organizational performance researchers do not identified the same dimensions Yemer and Chekol (2017), Ndungu (2013), Mwachiro (2013), Mohomad (2018) identified dimensions of organizational performance as Growth in revenue, Shabri, Saad, and Bakar (2016), identified profitability, Mutnuru (2015) identified employee performance, employee trust on employer ,employee engagement. Ayagre et al. (2014), Kumuthinidevi (2016), Douglas (2012), Gamage, Lock, and Fernando, (2014), Karagiorgos, Drogalas, and Dimou (2012), Paraskevi (2016), identified effectiveness. Further Ilias et al. (2016) identified financial performance, service quality, procedual performance Dineshkumar and Kogulacumar (2015), also identified service quality and profitability. Mahadeen et al. (2016) identified organizational competitiveness, job satisfaction ,customer satisfaction .Bett and Memba (2017), Collins (2015), Kinyua, Gakure, Gekara, and Orwa (2015), Murleetharan (2012), Njoki (2015), Nyakundi, Nyamita, and Tinega (2014) have taken financial performance which is a dimension of organizational performance. In here cannot identify consistency of dimensions relating to the organizational performance dimensions. It is an important problem observed in examining prior study. Therefore due to the practical issues of control efficiencies and literature gap exist in relate to the internal control and its impact on organizational performance of private commercial banks in Central Province of Sri Lanka lead to the identification of a research problem that is worth to study. The problem statement addressed in the present study: whether there is an impact of Internal Control on Organizational Performance of Private commercial banks in Central Province of Sri Lanka?

2. Literature review

Internal Controls are processes designed and caused by those charged with governance, management, and other personnel to provide rational assurance about the entity goal achievement with regard to reliability of the financial reporting, effectiveness and efficiency of operations and compliance with appropriate laws and regulations (Kinyua et al., 2015). The COSO framework identifies five main elements of a control system against which the review should take place. These include Control environment, Risk assessment, control activities, information and communication and monitoring. Internal control systems operate at different levels of effectiveness. Determining whether a particular internal control system is effective is a judgment resulting from an assessment of whether the five components - Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring - are present and functioning. Effective controls provide reasonable assurance regarding the accomplishment of established objectives (Adenugba & Adeyemi, 2011; Nyakundi et al., 2014).

Organizational performance is a process of cooperate managers well utilizing internal and external resources for achieving organizational objectives with high effectiveness and efficiency (Jao, 2006). There are three indicators to measure organizational performance, namely (1) Financial performance: such as return on investment, return on revenue, return on assets ,market share ,revenue growth and cost merit (11) Non-financial performance, Containing organizational existence(survival rate),stability (duration),and satisfaction (conforming to the expected objectives of the parent company, subjective assessment) and (111) Comprehensive performance, the simultaneously evaluating financial and non-financial indicators (Gung & He, 2005). Further organizational performance can be measure by following three dimensions.(1) Financial performance like revenue growth, market share ,earning per share, Growth rate (2) Operating performance: service/ product quality, added value, innovation rate (3) Behavioral performance: Turnover rate, employee morale, employee satisfaction, employee performance, organizational attractiveness (Chang, 2001).

The study by Olufunmilayo and Hannah (2018) aimed at examining the influence of internal control system on employee Performance .The study revealed that control environment and monitoring have significant effect on employee performance. The study concluded that internal control system significantly have influence on employee performance of small scale manufacturing enterprises in Ondo State, Nigeria. Study on Impact of the internal control system (Control environment, Communication, Risk management, Control activities and Monitoring) on organizational effectiveness in Jordan. The organizational effectiveness was deals with organizational competitiveness, job satisfaction, customer satisfaction and complaints. Results found that there is a strong positive correlation between internal control system (Control Environment, Communication, Risk Management, Control Activities, and Monitoring) and Organizational Effectiveness (Mahadeen et al., 2016). According to thesis titled on internal control contribution on efficiency and effectiveness in Eco Bank Ghana limited revealed that internal control systems in Eco Bank Ghana Limited in particular and the Banking sector in general. However, the effectiveness of the internal controls could not be described very effective since monitoring is less effective (Douglas, 2012).

A study on "Internal control effectiveness & its relationship with financial performance ".The Results showed that Internal control effectiveness is strongest in private banks, followed by public banks and weakest in Islamic Banks, although the difference is not statistically large, but slight variation exists. Moreover, private banks had a high level of financial performance; public banks had moderate level of financial performance whereas Islamic Banks were found to have low financial performance. Hence it was concluded that internal control effectiveness has a positive relationship with the financial performance of the banks (Khan, Shakri, & Chanar, 2015). Empirical study on effect of internal control on financial performance in an institution of higher learning in Uganda reveals that there is a significant positive relationship between internal control system (control environment, internal audit, and control activities) with financial performance (liquidity, accountability, and reporting) (Mawanda, 2008). Further researches investigates the effect of internal control systems on cooperative profitability. However, the researcher found that financial losses occurred in the cooperative is caused by inefficient cost control and not due to weak internal controls. Profitability can be improved with a new development plan as well as implementation of effective internal control systems within the cooperative. Good or strong internal control systems would have an effect on the cooperative's profitability as well as help the stability and growth of the cooperative movement in Malaysia (Shabri et al., 2016).

Research on "Effects of internal control system on the organizational performance of remittance companies in modadishu-somalia", revealed that control environment; risk assessment and control activity significantly affects the organizational performance of remittance companies in Mogadishu (Mire, 2016). Another research carried out to find out the impact of internal control and financial performance of private and public organizations in Jaffna district reveled that perceived internal control has significant impact on financial performance. Further a study identified that control environment and information and communication negatively influence on financial performance while risk assessment, control activities and monitoring of the internal control lead to better financial performance (Murleetharan, 2012). The assessment performed by a public accounting firm in connection with internal control over financial reporting process provides a major impact upon the reliability of financial statements prepared by these entities and therefore can significantly influence investment decisions. Research results support the conclusion that more effective internal control over financial is, lower the magnitude of fraudulent financial reporting can be settled (Spatacean, 2012).

3. Methodology

The main objective of this study was to examine the internal controls (*i.e. control environment, control activities, Risk assessment, information and communication, Monitoring*) on organizational performance of private commercial banks of central province of Sri Lanka. Research represents deductive approach and explanatory type. The conceptual framework of this study is depicted in Figure 01 below based on the deep analysis of literature.

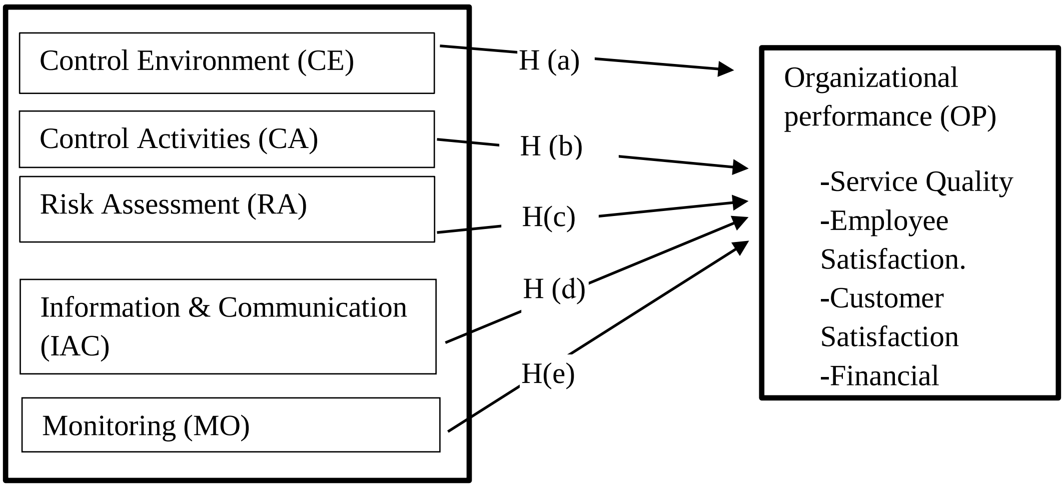

Figure 1: Conceptual framework of the study

Hypothesis (a): There is a significant relationship between control environment and organizational performance of private commercial banks in Central province
Hypothesis (b): There is a significant relationship between control activities and organizational performance of private commercial banks in Central province
Hypothesis (c): There is a significant relationship between risk assessment and organizational performance of private commercial banks in Central province
Hypothesis (d): There is a significant relationship between Information and communication and organizational performance of private commercial banks in Central province
Hypothesis (e): There is a significant relationship between monitoring and organizational performance of private commercial banks in Central province.

A total of 70 executive level employees at 95% confidence level were interviewed. Sample was selected from town area branches using stratified random sampling (70/85*100=82.35%) from Kandy and Matale districts, and questionnaires were distributed to the respondents. Population of this research includes executive level employees in Central province of Sri Lanka, which consist of officers, assistant managers and managers. Sample was chosen by using stratified random sample based on executive level employees in two districts of central province. Population of the selected private commercial banks includes 85 executive level employees as per the details given from regional offices of those banks. Close-ended questions were included in the survey questionnaire. The researchers have adopted the five-point Likert scale rating method (where; 1= *strongly disagree* and 5 = *strongly agree*) for this study. Most of the executive level employees were to provide all the details requested which resulted comparatively high response rate; in this study, (i.e. 83 percent) questionnaires were duly completed and returned and all were used in the analysis. The statistical package for social sciences (SPSS) version 21 was employed to run the results. Statistical tests were performed in order to ensure that the reliability and the validity measures were met. With an error level of 5%, no significant deviations between the sample and the population could be identified. Pearson correlation and linear regression tools were adopted to test the hypothesis.

$$Y= \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e$$

Where, Y=Organizational Performance, α = Constant, X1 = Control Environment, X2 = Control Activities, X_3 = Information & Communication, X4 = Risk Assessment, X5 = Monitoring

4. Data analysis and discussion of results

The main objective of this study was to empirically examine the impact of internal controls on organizational performance of private commercial banks in Central province of Sri Lanka. Data were collected from 70 executive level employees selected from two districts (Kandy and Matale) through a pre-tested structured questionnaire.

Table 1: Result of multicollinearity

Variable	Tolerance	VIF
Control Environment	0.799	1.251
Control Activities	0.641	1.560
Risk Assessment	0.496	2.017
Information & Communication	0.704	1.421
Monitoring	0.679	1.473

Source: Survey Data (2019)

To test the multicollinearity among independent variables tolerance value and variance inflation factor (VIF) value is calculated; it is generally believed that any VIF that exceeds 5 and a tolerance value lower than 0.10 indicates a potential problem of multicollinearity. According to the results in Table 1 the tolerance values are higher than 0.10 in private banks and the VIF values for each relationship falls in between 1.251 and 2.017 in private banks. Thus, there is no evidence for suspecting multicollinearity between the variables.

4.1 Demographic statistics of the sample

The total sample was categorized into seven categories under district, age, position, gender, and educational qualification, civil status, working experience.

Table 2: Demographic statistics of the sample

District	%	Gender	%	Civil status	%	Education qualification	%
Kandy	67.1	Male	84.3	Married	90	Secondary	1.4
Matale	32.9	Female	15.7	Unmarried	10	Certificate /Diploma	52.9
	100		*100*		*100*	Bachelor Degree	34.3
						Master and Above.	11.4
							100
Age	**%**	**Position**		**Working experience**	**%**		
18-30	15.7	Manager	14.3	0-10	18.6		
31-40	67.1	Assistant Manger	24.3	10-20	47.1		
41-50	17.1	Officer	61.4	Above 20	34.3		
	100		*100*		*100*		

Source: Survey data (2019)

According to Table 2, out of 70 managerial employees 67.1% managerial employees are from Kandy district and rest of respondents represent the Matale district. When comparing gender distribution in private commercial banks, 84.3% of majority represents male. Among four age categories most of the respondents of private commercial banks were under 31-40 age group which represents 67.1% and most of respondents were married which represents 90%. When considering this position, 61.4% represents officers in private commercial banks and managers were 14.3% which shows the lowest respondents in regard of position. When considering working experience in banks, 10-20 years range shows the highest respondents of 47.1% in private commercial Banks. Most of the respondents were certificate/diploma holders which represent 52.9% when considering the educational qualifications. Lowest level of respondents was secondary qualification holders in private commercial banks.

4.2 Reliability of the measures

Cronbach’s Alpha is used to assess the reliability and internal consistency of the data set. According to table 3, Results revealed that Cronbach’s Alpha coefficient over 0.68, showing a high internal reliability among the data gathered from the sample.

Table 3: Results of reliability analysis

Internal control	Cronbach's Alpha	Organizational performance	Cronbach's Alpha
Control Environments	0.799	Service quality	0.745
Control Activities	0.826	Employee satisfaction	0.732
Risk Assessment	.838	Customer satisfaction	0.882
Communication & information	0.751	Financial Performance	0.848
Monitoring	0.680		

Source: Survey data (2019)

4.3 Descriptive analysis

As shown in the conceptual framework, this study focuses on the impact of internal controls on organizational performance of private commercial banks in central province of Sri Lanka. Number of questions were developed under each variable, and respondents were asked to scale their views on five-point Likert scale (where; 1- *totally disagrees* and 5 - *totally agree*). The mean values, together with their standard deviations and skewness are given Table 4.

Table 4: Results of descriptive analysis

Independent Variable	Mean	Standard deviation	Skewness	Dependent Variable	Mean	Standard deviation	Skewness
Control environment	4.2229	.51363	-.421	Service quality	4.2952	.38193	-.603
Control activities	3.9229	.58907	-.303	Employee satisfaction	4.3429	.42684	-.793
Risk Assessment	4.0057	.57481	-.308	Customer satisfaction	4.0857	.66105	-.047
Information & communication	4.1800	.47077	-.405	Financial Performance	4.2976	.51224	-.584
Monitoring	3.9000	.49432	.302				

Source: survey data (2019)

According to Table 4, in this study, since all the skewness values in private commercial banks are not exceeding -1 or + 1 univariate distribution was normal. When considering the private commercial banks all the factors' mean values were within the range between 3.9-4.30. Employee Satisfaction (ES) shows the highest mean while Monitoring shows the lowest mean of 3.9. Standard deviation (SD) of private commercial banks shows values less than 1 which shows small deviations in responses given by respondents. In brief Mean and SD was used to determine the extent of spread of the data.

4.4 Correlation analysis

Correlation coefficient analysis was used to measure the direction and the strength of the linear relationship between variables. Table 5 shows the linear relationship between independent variables and dependent variables.

Table 5: Relationship between internal controls an organizational performance

		CE	CA	RA	IAC	MO	IC
OP	Pearson Correlation	.615**	.492**	.720**	.623**	.551**	.803**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	70	70	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data (2019)

Above Table 5, revealed that all components of internal control system are positively correlated with the organizational performance (OP) and there is a significant relationship between overall internal controls (IC) and the organization performance ($P<0.05$). According to Table 5, the Pearson correlation value for Control Environment and Organizational performance was 0.615, Control Activities and organizational performance was 0.492, risk assessment on organizational performance of private commercial banks was 0.720, Information and communication on organizational performance of private commercial banks was 0.623, Monitoring on organizational performance of private commercial banks was 0.551 and all values were significant 0.000 ($P<0.01$).

Therefore there has been a significant strong positive relationship with, Control Environment, Risk Assessment, Information and communication; while Monitoring & Control Activities have significant moderate positive relationship of internal control and organizational performance of Private commercial banks. These findings accept all the remaining hypotheses (H (a): There is a significant relationship between control environment and organizational performance of private commercial banks in Central province H (b): There is a significant relationship between control activities and organizational performance of private commercial banks in Central province, H (c): There is a significant relationship between Risk Assessment and organizational performance of private commercial banks in Central province, H (d): There is a significant relationship between Information and communication and organizational performance of private commercial banks in Central province H (e): There is a significant relationship between Monitoring and organizational performance of Private commercial Banks in Central province).

4.5 Regression analysis

Table 6, contains the result of the analysis of variance associated with the regression model and it includes sum of squares, degree of freedom, F value and P value. The F distribution is used to obtain information regarding the overall validity of the simple linear regression equation. This provides the idea on up to which extent the model is fitted. Regression model was fitted at a significant value of 0.000($p<0.05$). Further the adjusted R2 =0.722, this means 72.2% of the variation in Organizational performance is explained by components of internal control and remaining 37.8% of organizational performance of private commercial banks is described by other factors which are beyond in the study. Durbin-Watson is over 2 which is 2.109 and it demonstrates that there is a strong positive relationship between independent and dependent variables.

Table 6: Results of multiple regression analysis in private commercial banks

R=0.861		R^2 =0.742	Adjusted R^2=0.722	Sig.=0.000	Durbin Watson=2.109	
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
		B	**Std. Error**	**Beta**		
1	Constant	.065	.332		.196	.845
	CE	.272	.065	.309	4.204	.000
	CA	.018	.060	.024	.305	.762
	RA	.272	.069	.347	3.963	.000
	IAC	.265	.073	.276	3.645	.001
	MO	.196	.069	.215	2.845	.006

a. Dependent Variable: OP

Source: Survey data (2019)

Y= α + β1CE+β2CA+β3IC+β4RA+β4M +e
Y= α+.272CE+.018CA+.272RA+.265IAC+.196M+e

Where, Y=Organizational Performance, α = Constant, X1 = Control Environment, X2 = Control Activities, X_3 = Information & Communication, X4 = Risk Assessment, X5 = Monitoring

According to the Table 6, four variables out of five are significant at either 0.01 or 0.05 while one variable is not supported. The results revealed that Control Environment (CE), Risk Assessment (RA), Information and communication and Monitoring are statistically significant ($P>0.05$). But controls activities are higher than the 0.05 and is not statistically significant at either 0.01 or 0.05 showing control activities do not have a significant impact on organizational performance of private banks in central province of Sri Lanka.

5. Conclusion and recommendations

The purpose of the study was to examine the impact of internal controls on organizational performance of private commercial banks in the Central province of Sri Lanka. Results of this study underlined that executive level employees are satisfied about the existing internal control systems of the private commercial banks.

Researcher intends to conclude that there is a significant strong positive relationship between Control Environment (CE), Risk Assessment (RA), Information and communication and Monitoring while Control Activities have a moderate positive relationship with organizational performance. And also Control Environment (CE), Risk Assessment (RA), Information and communication and Monitoring have a significant impact on Organizational performance except Control Activities (CA). Therefore researcher concludes that Internal control components are very essential to enhance the organizational performance. The results of the analysis supports and reinforces the relationship between the internal controls and organizational performance as theoretically hypothesized in the previous research efforts (Ayagre et al., 2014; Ayom, 2013; Dineshkumar & Kogulacumar, 2012; Douglas, 2012; Gamage et al., 2014; Kumuthinidevi, 2016; Murleetharan, 2012) in the same way. Also those researches proved that the relationship between internal controls and organizational performance is statistically significant.

Researcher intends to recommend to maintain the existing internal control procedure and enhance the existing procedures while recommending the organization’s management to ensure, foster and maintain the highest standards of ethical behavior within the organization and implement awareness programs for employees and management staff to inform policies and procedures as well to sharpen their skills and knowledge with regard to implementation of internal controls. Convey all employees about risk assessment practically, implement a fraud control plan for the Banks, which addresses relevant risk factors and updated on a regular basis and undertake a fraud risk assessment (internal and external risks) at least once a year. Management should ensure it receives timely, relevant, and reliable reports for decision-making and that all relevant information is communicated to staff, all channels of communication are utilized by company staff, and that there is quick and free flow of information in time such as introduction of internet based communication that can communicate with each other while being anywhere in the world. Further, enhance the existing supervision and conduct on going evaluation during the working hours within the bank and evaluate current performance with the expected outcomes while managers improve the effectiveness of the internal control system in their bank.

A major limitation of this research is that the study focuses only on few private banks. Also the analysis was prepared only using the data gathered from perception of staff members in the Bank. Also another limitation is this study includes conservation nature of the organization and the apathy of staff members towards providing information especially with respect to their internal operation policies. Further, selecting few indicators from few dimensions of organizational performance is another limitation and also researcher will narrow down the sample to the central province Kandy and Matale district without conducting the study for all the bank outlets in Sri Lanka.

The researcher proposed some recommendations for future researchers who were interested in this area, for the purpose of making some improvements. Researchers who are related to this area are suggested to include more coverage on areas and they are suggested to conduct a survey for all the banks, to increase reliability. Further, the number of participants in the survey was quite small. The other researchers should increase the number of participants and put more time in doing research that could improve the quality of the research. In addition, there are many determinants that affect the organizational performance. Therefore, it is strongly recommended that, the future researchers have to add more dimensions on dependent variables in their research which will increase the significance of the research. Further researcher proposes to consider moderating variable on internal controls and organizational performance such as corporate governance in future researches to enhance the quality of the outcomes of the study.

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Levers of control, complementariness and tensions in the use of Budgetary control: A case study from a Sri Lankan apparel firm

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Abstract

Over the years management control systems (MCS) have been subjected to scholarly inquiry, as well as practitioner interest. According to the relationship of MCS to strategy and their use by top managers, the levers of control (LOC) framework which includes; belief systems, boundary systems, diagnostic control systems and interactive control systems has been put forwarded. More importantly, in terms of strategic use, MCS could be used diagnostically and interactively. The purpose of this paper is to identify the complementariness and tensions in the use of MCS diagnostically and interactively, using a budgetary control example. It draws empirical evidence from an apparel manufacturing firm (Pattern On) where budgetary control is used as the main control tool. The study employs the qualitative methodology and case study approach. Face-to-face in-depth interviews were carried out as the main source of data collection, and interview data has been supplemented by an analysis of internal documents. The findings of this paper provide important implications for practicing managers, for using a budgetary control example, it provides insights regarding the simultaneous use of control systems, diagnostically and interactively, and how any tensions arising through such use are managed. It also contributes to the current management accounting literature, particularly to budgeting as well as to the levers of control framework in terms of how controls are used diagnostically and interactively, while emphasizing the complementariness and tensions created by such levers. This is important as most prior research has explored diagnostic and interactive use in isolation, while budgetary control has also not been their focus.

Keywords: Apparel firm; Complementariness; Diagnostic; Interactive; Levers of control; Tensions

1. Introduction

Management control systems (MCS) comprise of a wide range of tools and mechanisms which facilitate managerial decision making by formulating plans and exerting controls, while being used to regulate the behavior of members of

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an organization. Such tools and mechanisms include budgeting, standard operating rules and procedures, reward systems, strategic planning systems, operational controls, values and norms etc. (Chenhall, 2003). Among these controls, budgeting is one of the most prominently used MCS in organizations (Bunce, Fraser, & Woodcock, 1995; Hansen, Otley, & Van der Stede, 2003; Libby & Lindsay, 2010; Otley, 1999). A budget is a quantitative expression of a plan for a defined period of time, thus forms a basis for directing, evaluating performance, coordinating and controlling organizational activities.

The area of MCS also carries a rich account of levers of control (LOC) literature (Henri, 2006; Simons, 1995; Tuomela, 2005; Widener, 2007), where MCS are clustered into four systems according to their relationship to strategy and their use by top managers, such as belief systems, boundary systems, diagnostic control systems and interactive control systems (Simons, 1995). To implement and control business strategy, managers need to identify the organization's core values, risks to be avoided, strategic uncertainties and critical performance variables (Simons, 1995). Ever since its introduction in 1995, Simons' LOC framework has received significant attention from researchers. There is thus a considerable body of literature premised on various facets of the LOC, and researchers have used it as a theoretical frame of reference in the management accounting research area (see for example, Henri, 2006; Tuomela, 2005; Widener, 2007). Despite the extensive adoption of Simons' framework and its four levers in isolation, studies founded upon the interrelationships, complementariness and the tensions between the simultaneous uses of the levers have been rather limited (see the review paper by Martyn, Sweeney, & Curtis, 2016). Addressing this omission, this paper using a budgetary control example and drawing empirical data from an apparel firm in Sri Lanka explores how diagnostic and interactive use of MCSs are used in facilitating a control environment, amid the complementariness and tensions surrounding these levers. Accordingly, the research questions of this paper are: 1) How are budgetary controls used diagnostically and interactively in the case study firm? 2) Do diagnostic and interactive uses complement each other, or are there any tensions in the simultaneous use of these two levers of control, and how are such tensions managed?

The remainder of this paper is organized as follows: the next section provides a review of prior literature covering management control systems and budgeting as well as Simons' LOC framework. This is followed by an outline of the research context as well as the methodology, which is the qualitative methodology and case study approach along with methods of data collection and analysis. Next, case study evidence detailing the budgetary control system of the firm, how budgets are used diagnostically and interactively, complementariness as well as tensions between the two levers of control, is presented, respectively. Thereafter a discussion of findings is offered, and the paper concludes outlining its contribution to literature, practice and suggesting directions for future research.

2. A glimpse of literature

2.1 Management control systems and budgeting

MCS comprise of a wide range of formal and informal approaches and mechanisms which assist organizations in developing and maintaining viable patterns of behaviour. Among various modes of management control, budgeting has been used as a popular tool in organizations across the globe (Bunce et al., 1995; Hansen et al., 2003; Libby & Lindsay, 2010; Otley, 1999). As Otley and Pollanen (2000) espouse the past 25 years have seen a stream of studies that have sought to explore the influence of budgetary controls on managerial performance. Nearly twenty years on, we see further proliferation of budgetary control literature. Budgetary control is the process of developing a plan, and periodically comparing actual expenditures and income against that plan to determine achievement of the budget and decide on future course of action. Accordingly a budget strives to control spending, achieve targets and financial goals (Dunk, 1989). Seeing in this manner, budgets are a major component of a MCS, and serve several crucial functions including being a framework for judging organizational performance and a basis for employee performance evaluation and rewards. Prior literature has provided significant insights on its role in the control arena of organizations (Epstein & McFarlan, 2011; Lau & Tan, 2015). Adding to this, contemporary research having recognised the wide scope nature of MCS, have included more contemporary tools, such as the balanced scorecard, activity based costing, bench marking target costing etc. into the banner of MCS.

Quite apart from the above, MCS in the apparel industry in Sri Lanka, which is the context of this paper has been subjected to scholarly inquiry (Doluwarawaththa Gamage & Gooneratne, 2017; Wijethilake, 2017). Doluwarawaththa Gamage and Gooneratne (2017) espouse how management controls in an apparel group in Sri Lanka take shape amid the tensions between external institutional forces and internal dynamics arising from different power and interest held by internal managers, as well as from intra-organizational norms, rules and taken-for-granted assumptions. Furthermore, Wijethilake (2017) has explored what forms of institutional pressures can influence sustainability practices, how organizations respond to institutional pressures for sustainability, and how MCS support strategic responses to such pressures. Differing from the above, in this paper using a budgetary control example, we delve into the complementariness and tensions in the use of diagnostic and interactive levers of control.

2.2 Simons' levers of control framework

Keeping with the burgeoning literature, various frameworks relating to MCS have been developed across time. The LOC framework is arguably one such important framework which is widely discussed in the literature, (see Martyn et al., 2016).The central theme of the LOC framework (Simons, 1995) is that the control of business strategy is achieved by balancing the forces of four different levers of control: beliefs (core values), boundary (behavioural constraints), diagnostic (monitoring) and interactive (management involvement). Beliefs systems are used to secure commitment towards goals and inspire employees to search for new opportunities (such as through vision, mission), while boundary systems set limits on opportunity seeking behavior (in terms of what is acceptable and not) and direct employees to meaningful end points and prevent them from wasting organization's resources. Moreover, diagnostic systems aim to motivate, monitor and reward achievement of specified goals, while interactive systems strive to stimulate organizational learning and emergence of new ideas. This framework shows the need of arriving at a strategic fit in the design of the MCS (Widener, 2007; Mundy, 2010), and is a useful analytical tool to explore the concepts of dynamic tension and balance because it is concerned with different uses of MCS rather than their technologies, structure, existence, or design (Mundy, 2010).

A core idea in this framework is that it balances the needs for innovation and constraints. Beliefs systems are used to enhance core values related to business strategy and to inspire search for new opportunities in line with these values. Boundary systems reduce risks by setting limits to strategically undesirable behavior. Through diagnostic control systems critical success factors are communicated and monitored. Finally, interactive control systems are used to discuss strategic uncertainties and to learn novel strategic responses to a changing environment (Tuomela, 2005). Keeping with the above, belief lever is defined as any control practice that communicates and reinforces firm values; the boundary lever focuses on practices that outline the acceptable domain of activity for organizational participants; and diagnostic lever focuses on practices that monitor key outcomes and correct deviations from pre-set targets (Curtis, Lillis, & Sweeney, 2017). Bisbe, Batista-Foguet, and Chenhall (2017) identify interactive control system as a multidimensional practice referring to five dimensions which include intensive use by top management, as well as operating managers, pervasiveness of face-to-face challenges, a focus on strategic uncertainties, and a non- invasive facilitating and inspirational involvement which is also called 'active dialogue and debate'.

More importantly, in terms of strategic use, MCS can be deployed diagnostically and interactively. Control systems can be used diagnostically, like traffic lights, to signal success in critical indicators (Simons, 1995). While budgets are claimed to be one of the most persistent type of diagnostic control (Horngren, Dartar, Foster, Rajan, & Ittner, 2009), action plans, detailed financial targets, and comparison of actual outcomes with targets and explanation of variances, are all forms of diagnostic controls. Diagnostic control provides direction to employees for aligning their behaviours with organizational goals, thus motivating performance (Widener, 2007). However, corrective actions alone are not sufficient for sustainability; new ideas must be developed (Henri, 2006). Interactive control allows top management to send signals that stimulate and concentrate organizational attention towards their preferences, strategic uncertainties, organizational goals and objectives (Simons, 1995). As noted by Simons, a specific characteristic of interactive control is that it involves a high level of top management involvement, providing an agenda and a forum for regular face-to-face dialogue and debate throughout the organization to promote and provoke discussion, with the emphasis on learning. Thus it fosters attention and interaction among actors across the organization. Interactive systems are forward-looking (Widener, 2007). However interactive discussion of specific performance metrics may initiate resistance for they increases the visibility of actions (Tuomela, 2005). Together diagnostic and interactive levers create a dynamic tension which has two effects, (a) ensuring that positive effects of interactive use of capabilities will be achieved, and (b) by imposing constraints for compliance diagnostic lever exert negative pressure on these capabilities. Widener (2007) asserted that relations between the two controls are inter-dependent, and Tuomela (2005) subscribed to the view that measurement systems can be used both diagnostically as well as interactively. Commonality is evident among these researchers that they all pronounce the complementary nature of these twin levers (Henri, 2006; Tuomela, 2005; Widener, 2007). Furthermore, Mundy (2010) noted how dynamic tensions are created through managers' efforts to balance the controlling and enabling uses of MCS. Overall, MCS (such as budgeting or the BSC) can function in the dual roles as both diagnostic and interactive tools.

In the previous literature, limited attention has been given to discover the dual uses, diagnostic and interactive, the interplay between different levers of control, as well as the resulting complementariness and tensions. See Henri (2006), Tuomela (2005) and Widener (2007) for notable exceptions. In his study on Canadian manufacturing firms, which strive to test the relationships between organizational culture and two attributes of performance measurement systems (PMS), i.e. the diversity of measurement and the nature of use, Henri (2006) note that diagnostic and interactive uses of management control represent complementary and nested functions, which need to be used jointly to manage inherent organizational tension between the freedom to innovate and predictable goal achievement. Furthermore, in a Finnish case study, Tuomela (2005) reported on the diagnostic and interactive use of the BSC. Widener (2007), who drew survey data from 122 CFOs, highlighted the need to use performance measurement systems both diagnostically and interactively to realize their full benefits. Differing from the above, our paper adds to the current body of literature by using a budgetary control example drawn from the apparel industry to illuminate how diagnostic and interactive systems could be used to facilitate a control environment amid the complementariness and tensions surrounding these levers. Such an illustration capitalizing on an in-depth case study with a focus on budgetary controls, although important, to date has received a limited research attention

3. Research context and methodology

3.1 Research context

Apparel manufacturing industry is one of the main contributors to the Sri Lanka's economy (Sri Lanka Export Development Board, 2017). The country is among the top apparel producers in the world (Wijethilake, 2017), and the industry has recorded substantial growth levels over the past four decades. As the country's leading export, it currently accounts for approximately 40 percent of total exports, and provides about 33 percent of the employment in the manufacturing sector of the country. Earnings from apparel exports were $ 4.8 billion in 2017. Sri Lanka has built its competitive edge through value-addition, rather than through cheap production cost, with greater emphasis placed on product quality and its ability to manufacture niche products (Sri Lanka Export Development Board, 2017). Apparel manufacturing industry in Sri Lanka carries a large manufacturing capacity, and accounts for 17% of the market share of US apparel imports (Sri Lanka Export Development Board, 2017). Sri Lankan apparel industry is known to be the "hub of South Asian fashion" with a pool of talented designers, on-line, real-time interaction with brands, while having many courses at leading universities dedicated to the apparel industry which are bringing out qualified graduates each year.

The case study apparel firm under inquiry, Pattern On is a non-listed, privately owned entity which manufactures intimate apparel, sportswear, performance wear, and swimwear. As became evident through internal documents of the company, it was established in the early 1900's, and is now one of the three leading global conglomerates in the apparel industry in Sri Lanka. Pattern On is specialized in providing end-to-end supply chain solutions to the apparel industry through factories in Sri Lanka, Bangladesh, Vietnam and Ethiopia. Their products are renowned for high quality, zero defects as well as for unique designs and finishing. The organization has a manufacturing capacity of about 5 million pieces per month within Sri Lanka.

The Sri Lankan operations of Pattern On are divided into two clusters, for the ease of operations, along with a central control unit.[2] A number of factories are assigned to each cluster, and each cluster fulfills orders placed by certain international buyers assigned to them. Accordingly, Cluster A consists of ten factories which employees over 12,000 employees, whereas cluster B consists of eight factories located island wide with over 10,000 employees. These clusters report to the head office of the company and each cluster is headed by a chief executive officer (CEO), who is appointed by the board of directors. As organizational records revealed, the head office provides directions and guidelines to clusters (ratios, pre-seen profit and profit targets etc.). Additionally, there is a separate entity formed as a hub for the entire group, which is involved in handling centralized financing in terms of shared services (named as "Pattern On hub" for the purpose of the paper). This hub oversees

[2]For the purpose of this paper, clusters are denoted as A and B.

the overall financial position and controls of both clusters, and provides each cluster with the information required for decision making (See Figure 1 for organizational structure of Pattern On).

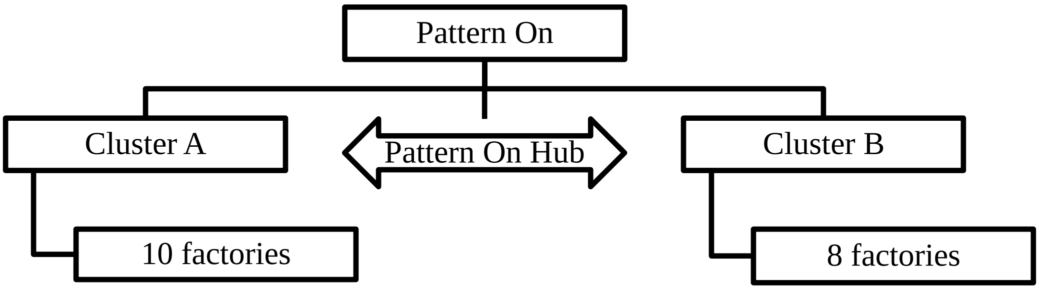

Figure 1: Organization structure

3.2 Methodology

Qualitative methodology and case study approach

This study employed the qualitative methodology (see Silverman, 2000) which is known to be useful in exploring the meaning that people attach to their experiences, enabled through building in-depth, face to face interactions with organizational members. Within the qualitative methodology, this paper follows the case study approach (Yin, 2009). Yin (2009) claims that a case study approach is appropriate when the focus of the study is to answer 'how' and 'why' questions; contextual conditions are believed to be relevant to the phenomenon under inquiry; it is not possible for the researcher to control events; the study is focused on contemporary events and experiences, and when the boundaries between the phenomenon and context are not clearly evident. Yin (2009) further stresses that a single case study is apt when the case represents a unique case or an experience. The case of Pattern On revealed a unique case, for it consist of two clusters and a central unit (hub). This study draws on interviews evidence gathered from representatives of both clusters as well as the hub.Furthermore, during the pilot interviews it was made to understand that the two clusters of Pattern On lay varying levels of emphasis to management controls. Being a clustered firm too reinforced the suitability of selecting Pattern On as a unique case for this study.

Data collection and analysis

Data collection for the study was carried out through a pilot study done in March to April 2018, with three key personnel in the field of accounting and finance. This enabled in obtaining a basic understanding about the company operations, structure, control systems, management accounting reports prepared etc. During the pilot study, data collected on management controls triggered the idea of leaning on Simons' LOC framework to explore the use of MCS with a focus on budgetary controls which is widely seen in the organization. Building upon the pilot study findings, the main study was conducted during the period from August to November 2018, which involved interviews with functional heads and other managers.

The initial interviews were with key members of the finance divisions of the clusters and head office as it was made to understand that they play a significant role in the design and implementation of management controls at Pattern On. Interviews were thereafter extended to other areas such as marketing, production and supply chain, human resources etc. as initial data revealed that key members of these areas are also involved in the decision-making process relating to interactive and diagnostic control mechanisms in the case study firm. In this manner a total of 13 interviews were conducted: eight in cluster A; three in cluster B and two at the Pattern On Hub which provides shared services to both clusters.

Table 1 presents a list of interviewees. Each interview lasted between 20 minutes to 1 hour and 15 minutes. Additionally, clarifications and further insights were obtained through several rounds telephone conversations with various managers interviewed.

Table 1: Informants of the study

Cluster	**Designation of the interviewee**	**Number of interviews**	**Key role**
Cluster A	1. Divisional head of finance	01	The head of finance division of the cluster and directly reports to the CEO of cluster
	2. Manager – finance	01	Responsible for the finance operations of the cluster and reports to the head of finance of the cluster.
	3. Assistant manager - operational finance	01	Directly reporting to the finance manager of cluster. A representative of managerial layer of cluster
	4. Senior manager – merchandising	01	Reporting to the Chief Marketing Officer of the cluster and is directly engaged in production decisions
	5. General manager - supply chain	01	Reporting to the CEO of the cluster and is directly engaged in decisions involved in production and raw material supply
	6. Senior manager - HR operations	01	Responsible for managing HR-related functions and is directly involve with HR related matters of the cluster
	7. Manager - HR administration	01	Responsible for managing HR-related functions and is directly involve with HR related matters of the cluster
	8. Manager - environment and sustainability	01	Responsible for managing sustainability and environmental issues and directly reports to Director of environment and sustainability compliance
Cluster B	9. Divisional head of finance	01	The head of finance division of the cluster and directly reports to the CEO of cluster
	10. Marketing manager	01	Directly reporting to the Chief Marketing Officer of the cluster and is directly engaged in marketing and sales of the business
	11. Senior manager - HR operations	01	Responsible for managing HR-related functions and is directly involve with HR related matters of the cluster
Hub	12. Manager - finance	01	Responsible for the finance operations of the cluster and reports to the head of finance of the cluster
	13. Assistant manager - operational finance	01	Directly reporting to the finance manager of cluster. A representative of managerial layer of cluster

While this study employed face-to-face in-depth interviews as the main method of data collection, such data was complemented by review of documents, such as functional budget working reports, excel sheets with estimates and variance analysis reports as well as KPI worksheets.
Interviews were voice recorded and transcribed verbatim. The transcripts were analysed in isolation and taken together as a whole, and then main themes identified and categorized under the key themes based on the two levers of Simons' LOC framework; diagnostic and interactive, grouping similar ideas together.

4. Case study evidence

Interview data revealed that budgetary control is used as the primary mode of management control in Pattern On, which is used both diagnostically as well as interactively. It further became evident that a control environment is emerged in the case study firm amidst this twin uses of the budgetary control system, giving rise to complementariness and tensions, which need to be managed to enable an effective control environment. These deliberations are elaborated in turn this section.

4.1 Budgetary controls

Evidence from our field data suggests that since its inception, high importance is placed on budgets in Pattern On. The Head of Finance- Cluster A noted:

> Budgets are really important because everything we do as a company is mostly decided based on budgets…...and of course, it has always been the biggest task of the finance division to oversee the budgetary processes. Now, if you take the time we spend on the preparation of budgets, it extends up to three months and there are days during the period when we work for thirty to thirty-five hours continuously.

Our interview encounters revealed that almost all employees of Pattern On contribute to the budget preparations in one way or another. It makes them accountable, thus creates compliances in their actions. According to Head of Finance – Cluster A, the budget preparation process is based on 100% participation and involvement of every party. He espoused:

> First of all, we make sure to get 100% participation in preparing budgets, we get inputs from all the relevant parties and also their signatures should be placed on the proposed budget to be approved. Actually, the main purpose of this participative process is to assure their compliance and accountability towards achieving the targets. But, it doesn't mean that we get all the figures proposed by them just as it is, instead every proposed figure is being analyzed and the rationale behind them are asked etc.

Seeing in this manner, in budget preparation involvement of all department and functional heads are ensured; they are given the chance to take part in the budget meetings, figures proposed by them are analyzed and discussed prior to acceptance. The words of Manager- Finance of cluster A further reinforced the above. She commented:

> The decision-making process is more of a top-down system, but the company culture seems to be a bottom-up, participative culture where the ideas and opinions from the lower levels are equally taken into consideration in preparing the budgets.

Similarly, a Merchandising Manager of cluster highlighted the importance of using the opportunity of participative budgeting system wisely. He commented:

> Initially we look at the trends and decide different or same product categories to hit the top line. Sometimes we have to do additions to budgets based on changing market conditions. So, we have the freedom to decide and give suggestions to improve on what's good, but we have to be careful since everything we say is not going to be accepted and left unquestioned.

Manager – Environmental and Sustainability of cluster B noted his involvement in the budgetary process. As he commented:

> Prior to budget preparations, during the period from October to November the finance division requests budget details from each function. We also give details and reports, but we don't participate in meetings. Instead we communicate with the reports provided with necessary workings for estimated figures for the next year.

Accordingly, majority of the heads and senior managers are involved in the process by providing estimates through various calculations, work sheets and reports regarding the budget forecast figures for the upcoming year. Furthermore some managers also participate in meetings where decisions relating to budgeting are taken.

4.2 Diagnostic and interactive use of budgets

This section presents how budgetary controls are used diagnostically and interactively in Pattern On, through the use of various reports and formats (diagnostic) and forums and discussions (interactive). Manager- Finance of cluster A stated that within his cluster a greater emphasis is placed on discussion. He added,

> Our reward systems are 100% linked to the annual budget. Therefore, everyone is focused towards achieving targets… we have monthly and quarterly review meetings and they discuss the performance of the previous month and a performance projection for the upcoming 3 months. If there are deficits in budgeted performances, the management accounting team suggests an action plan for each factory to be discussed with the factory accountants to recover such deficits

With a dissimilar opinion, while emphasizing the extensive use of report based figures and KPI's, the Assistant finance manager of Pattern On Hub, representing cluster B stated,

> Yes, the cluster has monthly review meetings. What they mainly review are some key measures. They have certain controls and KPIs to review performances, therefore what they mainly do is reviewing those KPIs, whether they have been realistic, achievable, whether there are any results that are beyond acceptance, if so their ranges and likewise, they assess everything compared to the budget reports

He further commented,

> A colour coded control system is there even though we don't call it by the name "traffic light system". What we believe is that red is critical. Since we analyse monthly, we understand what we should do and what happens, we see what we can do is to take corrective actions and we work on that. But each measure has different ranges which decides the colour to which they belong

Unlike the opinion given by Manager- finance of cluster A, the Assistant finance manager –cluster B commented more in favor of maintaining diagnostic controls within the organization which are more straight forward to monitor the achievement of targets be ensured with clear guidance.

Accordingly, the above two interviewees highlighted the uses of control mechanisms, with varying degrees of emphasis placed on diagnostic and interactive controls. Several others also shared their insights. For instance, Assistant manager – finance of cluster A stated,

> We have weekly KPI achievement review meetings arranged with the CEO through Skype every Wednesday. For that, we have allocated a time slot to each factory and division to discuss with the CEO regarding the achievement of KPIs that drives the company, such as on time delivery, efficiency, etc.

He further emphasized their dependency towards discussion based controls by stating,

> Apart from KPI review meetings, we have weekly profitability meetings to assess profitability of individual customers, weekly overhead projection meetings and many other active discussions where important decisions are taken by comparing budgets with the actual and to take corrective measures.

His comments provided further evidence that priority is given to interactive controls at cluster A. Differing from this, Finance manager of cluster B commented that cluster B is oriented more towards diagnostic controls and measures. He said:

> Weekly revenue report, monthly activity report prepared based on monthly performance based figures, are some of the key data we refer prior to decision making.

As the words of interviewees revealed both diagnostic and interactive control systems have their own merits. According to the merchandising manager of cluster A, it is essential for an organization to have interactive control systems. He stated,

> Of course, it's good to have meetings and discussions to make decisions. Anyway, we can't work in isolation because it's not about fulfilling our personal needs, it's the organizational goal what we should achieve. Therefore, it is the responsibility of the whole company to work together to achieve those goals…. so there is no point in having all these goals limited to documents. In fact, interactive sessions give us space to learn and look at the world from different perspectives.

Similarly, a manager from cluster B highlighted the need of interactive controls especially for some functions. He stated,

> Discussions should be there especially for finance divisions as they need to evaluate revenue and expenses figures, decide what's good for the company and give good earnings to owners and employees. Therefore, meetings should be there.

While, the Senior Human Resources Manager commented,

> Yes, of course, because without discussion sometimes we cannot rationalize why we request such big amounts under such challenging and uncertain situations. Therefore, we need to have budget and review meetings.

Seeing in this manner, interviewees from both clusters, A and B acknowledged the use and existence of interactive control systems. Nevertheless interviewees from cluster A appeared more positive towards interactive controls, while cluster B seems to be bent towards diagnostic controls. Further insights on this was provided by the Assistant Finance Manager of cluster B,

> Our decision making is mostly based on data and numbers. We take decisions by looking at past trends, how the cluster has performed and accordingly we allocate costs to the upcoming year by looking at the numbers. Therefore, we need reports, documents, pre-determined figures and standards to compare our outcomes, track the progress, monitor results and forecast future.

He further added,

> I don't think anyone would say that they can succeed without numbers and figures. Nobody can work only with imagination and what they believe to be right. If I take an example, our cluster prepares a report called 'pre-seen profit' based on the revenue and cost figures for a particular month and based on that, we decide which buyers need to be prioritized and which styles generate most profits to the company. Therefore, I strongly believe that no company would sustain without having a number base behind their decisions.

While the interview evidence presented above shows that the two clusters display varying levels of emphasis on diagnostic and interactive controls. Our data from the field also depict that clusters of Pattern On do not exclusively rely on a single use; instead there is an element of concurrent use of diagnostic and interactive controls, as espoused by our interviewees. This explicably gives rise to complementariness and tensions and the next section elaborates on this.

4.3 Complementariness between the two levers of control

The simultaneous use of diagnostic and interactive systems, would understandably give rise to complementariness and tensions. In this section we explore how the diagnostic and interactive use of budgetary controls complement each other, and what tensions occur in creating a control environment. According to the merchandising manager of cluster A, it is not a single system that leads a company towards success. He commented,

> I don't see the use of meetings and standards or figure based reports separately. What I believe is that none of these give a meaning if they are taken separately. You cannot conduct a meeting without looking into numbers. What we do in meetings is basically discussing the figures given in reports and worksheets, we discuss KPIs, we decide what needs to be done in order to overcome bad situations and improve good situations. So, if we don't have supporting documents and figures, there's no point of having meetings specially in terms of reviewing performance of budgets versus actual.

He further added,

> Say dashboards for example, they display details of selling price per piece, available capacity, raw material write-off, order to ship ratios, cut to ship ratios and various other ratios and they are categorized into colors as red and green mainly. Imagine if one ratio gives a critical result which needs improvement. How can we take necessary actions to correct it without having collective discussions? On the other hand, imagine we didn't have anything like a dashboard to view the performance outcomes. If so how can we even know that such a bad situation exists?

In favour of the above statements the Manager – HR administration of cluster A stated,

> Of course, we need both types of controls. Budget figures are already there in the work sheets, it is well documented. Merely having them in documents wouldn't help us get it approved. Therefore, we need meetings and discussions as and when needed.

In similar vein, Assistant Finance Manager of Pattern On Hub, representing cluster B mentioned,

> We need to have data to justify something and give reasons with evidence. Normally, we know what questions are going to be raised at

> us during meetings, so we can prepare in advance….and based on KPIs only they review your performance and discuss at meetings. Therefore, even in deciding our rewards and bonuses, both these types of controls are used.

The Senior Manager – HR operations of cluster B too commented in favour of both controls. He stated,

> People who participate in those meetings have their own reports to present and give reasons to support, or in other words they use those reports and figures to say why we achieved it and how we are going to achieve it. But sometimes the counter parties may have some other ways of doing things as we discuss them together. In a table where we have expertise, when I present, someone else will give another idea which is superior to mine, in such cases we will accept it. Having documents and reports mean that we have details on our hand, but on the table, we need to discuss everything with related to them. Therefore, discussions and reports are two different things, we cannot sacrifice one over the other.

According to the data gathered in terms of how the complementary use of diagnostic and interactive controls are perceived by various managers it was evident that Pattern On has created a positive control environment in this regard. As Assistant Finance Manager of Pattern On Hub, representing cluster B mentioned,

> We have constructive arguments for a common goal based on the budgets prepared, not to put someone down, but to achieve a common goal. Obviously, as a company with different types of personalities not 100% of employees agree on having focus on KPIs, performance and all. But in this company, I haven't seen much of negative behaviour. Everyone seems to be driven towards achieving targets for performances and since such meetings trigger out ways of achieving targets, so both control reports and meetings are given importance. I think the company is encouraging employees to look at both which is ultimately good for the company.

The above empirical evidence shows the complementariness between the two levers of control; diagnostic and interactive when implemented simultaneously. It was further revealed that the two levers also work interdependently in creating a control environment within the organization. For instance, diagnostic control reports, documents and pre-determined figures, such as KPIs form the base for most interactive sessions, such as budget preparation meetings, budget review meetings and KPI review meetings. On the other hand, there would be no use of preparing reports, figures, budgets or similar documents and calculating measures if the firm does not depend on such figures for decision making done at various meetings. Seeing in this manner, these two levers; diagnostic and interactive control systems complement each other when used simultaneously in Pattern On.

4.4 Tensions between the two control systems

As our evidence gathered through interviews reveals, the simultaneous use of diagnostic and interactive controls also give rise to tensions within the two clusters of Pattern On. As a Marketing Manager of cluster A stated,

> Sometimes we need to look beyond the figures and details given by various reports prepared. There can be situations when the profit figures display large unfavourable balances but if you look at the customer wish lists and preferences you might need to take completely contradicting actions to assure customer satisfaction. In such cases if we only look at the figures given in reports and documents and take decisions we might lose some of our major customers. At the same time, if we decide through meetings that we will be satisfying the customers no matter what the consequences may be, then again we might incur huge loses which is not good to the company.

Similarly, the environmental and sustainability manager of cluster A commented in favour of the above argument,

> Having both types of controls may be sometimes unrealistic and often a pain because, if we really look at the business environment, taking decisions after several rounds of discussions and forecasts and calculations do not always work. As the business environments and the economic and political situations of the country are fast moving, the companies should also have some kind of actions to face them.

He further commented,

> There can be situations when the changing governments impose new rules and regulations, say every factory needs to have a water treatment plant by the end of this year as announced by the government. In such a situation, there's no way we can wait long for approval. Such situations need fast responses. We cannot wait until the finance division allocates funds for our division and the proposed figures get approvals through several rounds of discussion. We need to implement the decision fast as it is going to affect the whole company if we did not do it.

In this manner, the simultaneous uses of these two control systems may not complement each other in certain situations, such as in emergencies where immediate responses are vital. Therefore, prompt action is needed to create a better control environment amidst tensions between interactive and diagnostic controls.

Faced with tensions clusters take measures to manage tensions and ensure smooth operations. For instance, Environmental and Sustainability Manager elaborated how such situations are usually addressed. He added,

> Because of the reason that getting approvals on required amounts on emergency situations are hard and the process takes time, we sometimes request higher amounts for the respective years' budget. Through that what we try is to get the funds as early as possible. If we could get approval for a budget for a higher amount than we need for the next year, what we do is

> we use them for the following years' needs in advance which help us to get the benefits also in advance. This does not always work and contradicts with limited budget allocations. But still we try to do that since chances are there that they work sometimes.

The Marketing Manager of cluster A stated,

> We need to have both types of controls in place; that means numbers, reports and ratios as well as discussions to take decisions. But apart from that we need to extend our projections and concerns beyond the normal boundaries so that we can capture all external threats and opportunities. We should not limit our discussion points to what is already displayed in reports and pre-set standards.

As the foregoing interview evidence suggest, while each clusters may be more oriented towards a particular use of controls systems (diagnostic or interactive), the simultaneous use is acknowledged and appreciated in Pattern On.

5. Discussion and conclusion

Leaning on Simon's LOC framework, in this paper we explore the complementariness and tensions in the diagnostic and interactive use of MCS drawing empirical evidence from an apparel manufacturing firm, Pattern On where budgetary control is used as its main control tool. Complementary use of these dual levers of control has been advanced by a number of past researchers (Henri, 2006; Tuomela, 2005; Widener, 2007). Henri (2006) carried out a quantitative study on the relationship between the use of MCS and organizational capabilities, while Tuomela (2005), explored the interplay of different levers of control with a focus on the introduction of a new performance measurement system, the "3K Scorecard". Besides Widener (2007) engaged in a survey study which shows that there are multiple inter-dependent and complementary relations among control systems. Despite its focus on complementary use of diagnostic and interactive control, this paper differs from prior related work, for it is premised upon budgetary control and involves a qualitative inquiry founded upon an apparel firm.

Our field data show that diagnostic and interactive controls appear in both clusters of Pattern On (A and B). However, the extent of use, the way they are perceived by employees, their consequences, complementariness and tensions differ among the two clusters. Cluster A displays more emphasis on interactive controls, whereas cluster B displays more emphasis on diagnostic controls. Of further importance, this paper shows that even within the same firm, the extent of use of interactive and diagnostic controls may differ among different clusters. Prior literature notes that by giving more attention to interactive controls there is a greater possibility for an organization to be successful (Tuomela, 2005; Widener, 2007). However, the findings of this paper do not make a clear point in this regard. For internal document analysis at Pattern On showed that cluster A, while being highly dependent on interactive control experiences declining performance. On the other hand, cluster B with moderate dependency on interactive controls and high reliance on diagnostic controls shows growing profits over time.

The study by Curtis et al. (2017) identifies several characteristics of interactive control systems such as enabling discussion in meetings among superiors, subordinates and peers; becoming a means for continual challenge and debate of data, assumptions and action plans; providing a common view of the organization ; enabling the organisation to focus on critical success factors and developing a common vocabulary across the organization. Even though majority of the interviewees in cluster A commented in favour of interactive controls, enabling continual challenge, dialogue and debate which is a key characteristic of an interactive control system was scarcely visible in cluster A. According to interview findings, although meetings were held regularly, subordinates and peers did not actively engage in dialogue and debate in the presence of the top management, instead passively accepted the wisdom espoused by the top management, rather than questioning them. In such an environment, control systems used can hardly be identified as interactive. This observation is somewhat attuned to the Sri Lankan culture where most individuals hesitate to participate in open discussions. Furthermore, dominating characteristics of key personnel may cause such a scenario where subordinates have no choice other than to agree and obey regardless of whether the decisions made appear right or wrong. Seeing in this manner, although cluster A had given more prominence to interactive controls, its use is rather fragmented, and a fully-fledged interactive control system is not visible. Seeing in this manner, management control data and plans generated through the budgeting system rarely became an interactive forum. This dilutes the use of MCS interactively. Such deliberations are practically seen in business organizations, and prevents control systems (including budgets) reaching a level of a complete interactive method.

Quite apart from the above, it was seen that cluster B has a well-developed colour coded indicator system and a unique diagnostic control system in the form of a “flash report”. This report is generated daily, and provides a comparison of daily and cumulative year-to-date and month-to-date comparison of the achievement of efficiency, cut-to-make margins and other related information which needs continuous monitoring and compliance with budget targets. It is closely reviewed by the director board. One may view that the existences of such wide encompassing diagnostic control mechanisms which are regularly monitored by the top management as a possible reason for the high profitability in cluster B. In that sense this paper differs from past literature, which suggests that interactive controls are more useful than diagnostic controls (See for instance Tuomela, 2005).

Notwithstanding the above, the study by Tuomela (2005) also identifies certain advantages of diagnostic control systems compared to interactive control systems. For instance, diagnostic control systems are rather straightforward, requires an immaterial amount of discussions for decision making, thus less time consuming, makes it easy to set targets and little resistance is seen compared to interactive controls. In contrast, interactive controls can sometimes be troublesome as time spent on data gathering creates more problems, needs several rounds of discussions, increases visibility of action and increases resistance by most individuals. Furthermore, although the top management is supposed to be heavily involved in interactive control systems, they may not be extensively used by high-level managers. In that sense, at times diagnostic controls may show superior benefits compared to interactive controls. Our findings bear similarity to prior literature, such as to the work of Widener (2007) in terms of the complementariness of the two levers of control, by espousing that interactive and diagnostic approach to controls coexist and are interdependent, while working together simultaneously to achieve different purposes.

An important deliberation emerging from the findings of this paper is that both interactive and diagnostic controls have their own positive and negative impacts on organizational activities. Rather than ruling one type as superior, what is best depends on the particular organisational circumstances. For instance, in the case of certain organizations diagnostic systems via monitoring and rewarding achievement of specified goals will be preferred, where as in certain others interactive systems through active management involvement, which would also stimulate organisational learning and emergence of new ideas (See Simons, 1995) would be more suitable.

It needs to be further highlighted that in the case of clustered firms each cluster may use management controls differently, one cluster with a higher emphasis on interactive controls, while another focusing more on diagnostic control systems. For instance, in the context of Pattern On, the conflicting profitability statuses achieved by the two clusters is linked to the prominence given to each control, and the characteristics of their key players. Cluster A has more priority given to interactive use related to budgetary controls, whereas cluster B implements more diagnostic controls although interactive controls are also given a moderate prominence. In that sense, the unsatisfactory performance of cluster A, is alongside the extensive use of interactive controls, while the exceptional performance of cluster B is appeared to have been achieved with more attention placed upon diagnostic controls, together with a moderate emphasis placed upon interactive controls. Therefore one may argue that the reasons for the varying profitability statuses of the clusters to be linked to the dominance placed by top management and resistance of individuals to interactive controls because of increased visibility of actions, which is typically featured in interactive sessions.

This study makes several contributions to current body of management accounting knowledge, particularly to budgeting as well as to LOC literature, by providing an in-depth analysis through examining how controls are used diagnostically and interactively, while emphasizing on the complementariness and tensions created by such levers, which to date has received limited attention from researchers. While previous literatures had studied LOC framework and its uses in terms of diagnostic and interactive controls in isolation, this study addresses the simultaneous use of levers with a focus on budgetary controls. In doing so this paper draws empirical evidence from a leading apparel firm and thereby provides valuable insights for practicing managers regarding simultaneous use of these levers of control, any resulting tensions and how such tensions are managed. While this paper focusing upon two aspects of Simons LOC framework has explored how budgetary control is used interactively and diagnostically, future researchers are inspired to draw on all four elements of the LOC framework to identify how an effective control environment is achieved through balancing the four levers.

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The impact of IFRS adoption on firm performance: Evidence from Sri Lanka

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Abstract

Considering dearth of empirical findings in the extant literature on the impact triggered by International Financial Reporting Standards (IFRS) adoption in Sri Lanka, this paper attempts to examine the impact of IFRS adoption on firm performance of Sri Lankan listed companies. Therefore, the objective of the paper is to examine whether there is a significant change in financial and market performance of companies listed on the Colombo Stock Exchange (CSE), Sri Lanka. Data related to financial performance of all listed companies from 2009 to 2016 which includes data of pre-IFRS adoption period (2010 and 2011) and post-IFRS adoption period (2012-2016) were collected from audited financial statements. Stock market performance of selected companies was computed based on data available in the CSE data library. Paired sample t-test was used to draw empirical evidence to test the hypothesis of the study. Empirical evidence of the study indicates that there is a significant increase in firm performance of Sri Lankan listed companies after the IFRS adoption. This study adds new findings to the accounting literature by examining the impact of IFRS adoption in Sri Lanka.

Keywords: CSE; Financial Performance; IFRS adoption; Market Performance; Sri Lanka

1. Introduction

Enabling a universal language for fast-changing accounting world, International Financial Reporting Standards (IFRS) were introduced by the International Accounting Standards Board (IASB) in 2001 (Abata, 2015). Previously, International Accounting Standards were issued during 1973-2001 by the International Accounting Standards Committee (IASC) (the predecessor of IASB) (Black & Maggina, 2016). First, IFRS began as an attempt to harmonize accounting practices across the European Union. Later the benefits of harmonization quickly made the concept attractive around the world. This harmonization was well-supported because economic and financial barriers among different countries were fading due to international trade, technological advancement, growth of international financial markets and the presence of the multi-national companies. In late 2009, the Accounting Standard

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Committee (ASC) together with the Institute of Chartered Accountants in Sri Lanka (ICASL), the accounting body which is responsible for issuing accounting standards in Sri Lanka made a decision to converge fully with IFRS. In 2012 IFRS were introduced to Sri Lanka as Sri Lanka Accounting Standards corresponding to the IFRS (SLFRS) by ICASL. From 1st January of 2012, it became mandatory to all Specified Business Enterprises to report their financial accounting process in accordance with IFRS (ICASL, 2019).

IFRS were introduced to enhance the usefulness of the general purpose of financial statements, ensure better quality of financial communication, and improve comparability and transparency in reported results (Joshi, Yapa, & Kraal, 2016). However, adopting IFRS is quite challenging as it requires disclosing more information, incurring cost in transforming existing accounting practices to IFRS, and mitigating the influences from present socio-technical factors of an organization. Various authors such as Gonzalez, Nave, and Toscano (2014), Abata (2015), Espinosa, Maquieira, Diaz, and Abarca (2015), Black and Maggina (2016), Stent, Bradburg, and Hooks (2010) and Bayerlein and Al-Farooque (2012) have conducted research to investigate the influence of IFRS adoption on organizations. Espinosa et al. (2015), in their study on the adoption of IFRS in an emerging market (i.e., Chile) reported that adopting IFRS induced a statistically significant change in financial indicators. They have also found that market reaction to the adoption and implementation of IFRS is neither rewarded nor punished by the market. Another study by Black and Maggina (2016) on the impact of IFRS on financial data in Greece found that IFRS had not resulted in improving statistical behavior of financial ratios. Besides the results indicated IFRS adoption does not necessarily improve the usefulness of financial statements. Stent et al. (2010) have conducted a study on the impact of IFRS on financial statements and financial ratios of New Zealand (NZ) firms. Results of the study indicated that 87% of NZ firms were affected by the IFRS. According to their statistics the impact of IFRS adaptation on most firms was low whereas the impact was large for some entities and the impact on financial ratios was considerable. Gonzalez et al. (2014) in their study on the impact of IFRS adoption on financial statements indicated that there were significant changes in income statement items and balance sheet items. A study by Bayerlein and Al-Farooque (2012) on the influence of a mandatory IFRS adoption on accounting practices concluded that mandatory IFRS adoption creates a significant harmonization of deferred taxation and goodwill accounting practices of Australia, Hong-Kong and the UK. Furthermore, the study found that the increase of adequate accounting policy information in financial reporting documents of UK firms over the period was identified as an important harmonization accelerator. Abata (2015) found that IFRS adoption provides better information for regulators than Generally Accepted Accounting Principles (GAAP) in the context of Nigerian financial reporting practices. Nijam (2016) in his study on the impact of IFRS adoption in Sri Lanka which is an evaluation of financial reporters' perspective reported that IFRS adoption is perceived to have significantly improved financial reporting quality and corporate governance in banking, finance and insurance sector firms. Additionally he reported that eventhough IFRS adoption has increased cost of financial reporting it is yet perceived to be a gain.

However, the findings of relevant past studies (i.e., Espinosa et al., 2015; Gonzalez et al., 2014) cannot be replicated to Sri Lanka due to difference in time periods of countries which adopted IFRS, and the differences in socio-cultural, economic, political, technical and legal factors. The difference in the nature of ownership, governance in each country and legal systems are also likely to impact the view of IFRS implementation (Black & Maggina, 2016). Therefore the present study attempts to examine how mandatory IFRS adoption impacts firm performance of Sri Lankan companies. More specifically this study attempts to achieve two objectives: to examine the difference in financial and market performance of listed companies in Sri Lanka before and after adopting IFRS; to investigate the impact of IFRS adoption on financial and market performance of listed companies in Sri Lanka.

The remainder of the paper is organized as follows. Section 2 of the paper reviews relevant past studies on the area of IFRS adoption. Section 3 explains the methodology adopted in the study. Empirical results of the study are presented in Section 4, and Section 5 contains discussion and conclusion of the paper.

2. Literature review

2.1 Harmonization of accounting practices

In 1494 Luca Pacioly introduced the double entry book-keeping system that describes the debits and credits in journals and ledgers which still forms the basis for today’s accounting system. Afterwards the industrial revolution and the development of corporations created the need for more advanced cost accounting system. First in the United Kingdom (UK) and United States (US) accounting was advanced into a profession. Subsequently, in 1887 American Association of Public Accountants was established with 31 Accountants. Securities and Exchange Commission of the US was established in 1934 (Tokar, 2005). Accordingly, all public-trade companies in the US were required to file periodic reports which had been certified by members of accounting profession. According to Adams, Weetman, and Grey (1993), the American Institute of Certified Public Accountants (AICPA) and its predecessors had the responsibility of setting Accounting standards. However, with the establishment of Financial Accounting Standards Board (FASB) in 1973, responsibility of setting standards were moved from AICPA to FASB. The same authors highlight that the AICPA and FASB started to set Generally Accepted Accounting Principles (GAAP) for the US. The purpose of GAAP is to ensure that companies use a uniform set of standards in preparing financial statements. According to Gresham (n.d), publicly traded companies and local, state and federal government entities are required to comply with GAAP than the private companies. There are some limitations in GAAP such as useless in inflationary situations, possibility of misinterpretation, not applicable for specific users, silent about the format of income statement and not considering the latest area of accounting. Due to the inherent limitations of GAAP and the growth of international financial markets all over the world most of countries needed to adopt IFRS in order to make a movement towards uniformity which is called standardization. In similar words, it is an imposition of a rigid and narrow set of rules and even a single standard or rule may be applied in all situations (Choi & Meek, 2011). Though the standardization is a good concept Choi and Meek (2011) has mentioned that it is more difficult to implement internationally. Therefore it proves that harmonization requires more openness and flexibility rather than standardization.

The objective of accounting standards is to harmonize various accounting policies to ensure the ease of comparing different financial statements (Cortese & Irvine, 2010). According to Choi and Meek (2011), harmonization is a process of increasing the compatibility of accounting practices by setting limits on how much they can vary. It is a movement away from total diversity of practice. Nair and Frank (1981) have reported that serious attempts were made to harmonize international accounting practices. The importance of harmonization is widely accepted due to rapid development of international capital markets, increasing frequent cross-listing of multinational companies, and activities of institutional investors (Alexander & Nobes, 2008). At the same time both success and failure exist in the process of harmonization. This process enhances the common financial reporting language and increases the comparability of financial reports prepared in different countries (Chairas & Radianto, 2001). It also removes barriers to international capital flows by reducing the differences in financial reporting for participants in international market (Chairas & Radianto, 2001) though there are some limitations such as time consuming and high cost. Dudovskiy (2013) has reported that harmonization would be useless when there are differences in economic development. Currently, many countries all over the world prepare their financial statements based on the IFRS in order to harmonize financial reporting practices. Furthermore, important developments took place in the European Union (EU) in terms of IFRS adoptions. All listed companies in the EU need to prepare their consolidated financial statements using International Accounting Standards (IAS) or IFRS (Chairas & Radianto, 2001).

Historical development of accounting practices vary from one country to another (Chairas & Radianto, 2001). An exploratory investigation by www.afaanz.org has examined the environmental factors that influence the development of accounting and financial reporting practices in Sri Lanka and how different institutions contribute to the development of financial reporting. The study reveals that accounting and financial reporting practices in Sri Lanka are influenced by political, legal, economic and cultural factors. It is a widely accepted fact that the political system of a country influences the business environment and accounting practices. In 1977 the government of Sri Lanka introduced the trade liberalization which resulted additional disclosures being demanded by the investors and created demand for professional accountants to improve the country's accounting and disclosure practices

(Yapa, 2006). According to Lawrence (1996) the legal system has a direct impact on accounting practices. The legal system contains detailed accounting regulations specifying comprehensive rules and procedures (i.e., Companies Act, 2007; Sri Lanka Accounting and Auditing Standards Act, 1995). It is argued in the same exploratory study that culture can be considered as a factor that influences the development of accounting and disclosure in Sri Lanka owing to normative institutional pressure that arises primarily from professionalism. The economic system of a country influences the requirement of company information. Lawrence (1996) also states that Sri Lankan open economic system influences to have an effective mechanism for disclosure of quality information. Finally the study reveals that the British colonial system influenced the early days of accounting and disclosure practices of Sri Lanka and greatest influence came from regulatory and institutional framework backed by local and British professional accounting bodies. The IFRS adoption has been driven by International Federation of Accountants (IFAC), IASB and the World Bank. In 2012 IFRS were introduced to Sri Lanka as Sri Lanka Accounting Standards corresponding to the IFRS (SLFRS) by the ICASL. From 1st January of 2012, it became mandatory for all Specific Business Enterprises to carry out their financial accounting process in accordance with IFRS (ICASL, 2019). By now Sri Lanka has fully adopted the IFRS and achieved technical efficiency.

2.2 Prior research on IFRS adoption and firm performance

Eisenhardt (1989) states that agency theory is directed at the ubiquitous agency relationship in which one party (the principal) delegates work to another (the agent) who performs that work. Agency theory is concerned with resolving problems that can occur in agency relationships. Given this conflict, Samaha and Khlif (2016) stated that accounting choices and disclosure can be used to reduce agency cost thus information asymmetry exists between principal and agent. In listed companies, the main source of information available to shareholders is financial statements. Therefore, management is expected to provide accurate, understandable, reliable and relevant information to shareholders on firm performance in order to assist them in future investment and other decisions. With the adoption of IFRS the quality of accounting and financial information is expected to be increased by enabling shareholders to take more informed decisions on their current and prospective investments.

Financial reporting under IFRS appears to provide more information on company performance (Adams et al., 1993). Using data of 40 listed companies in Zimbabwe, Chamisa (2000) investigated the relevance and observance of the IASC standards. Empirical results of the study revealed that the sample companies are voluntarily and significantly comply with certain provisions of the IAS. Umobong (2015) has carried out a research based on data of 16 quoted food and beverages manufacturing firms in Nigeria Stock Exchange during 2009-2013. The author has reported that differences in market performance between pre and post IFRS periods are not significant, and found a weak correlation between the adoption of IFRS and market performance of the firms. Jermakowicz and Gornik-Tomaszowski (2006) have shown that countries with financial markets that are open to foreign investors are more likely to adopt IFRS. Umobong and Ibanichuka (2016) have examined the impact of IFRS adoption and firm's financial performance using listed food, beverage and pharmaceutical firms on Nigeria Stock Exchange from 2006-2014. Their findings indicate that there is no significant difference between mean of return on assets (ROA), return on equity (ROE) and earnings per share (EPS) before and after adopting IFRS. Khaled and Khlif (2016) have examined the impact of adopting IFRS in developing countries. Results of the study indicate that the IFRS are contributing to improve and raise the professional level of accounting, decision accuracy of external investors and contribute in the advancement of the stock markets and to improve the process of comparison, analysis and discussion of financial information. Abdullahi, Abubakar, and Ahmad (2017) have studied the association between IFRS adoption and performance of oil and gas companies in Nigeria. Empirical evidence of the same study highlights that IFRS adoption has not improved the performance of the selected companies.

A study by Latridis and Rouvolis (2010) illuminated that the implementation of IFRS has introduced volatility in key income statement and balance sheet measures of 254 Greek companies listed on the Athens Stock Exchange during 2004-2006. Further the same study has reported that firms' financial measures have improved significantly after adopting the IFRS. Pascan and Turcus (2012) have investigated the impact of first time adoption of IFRS on the performance of 14 Romanian companies listed on Bucharest Stock Exchange using the financial statements for 2007. The authors found that there is a slight change in net income reported in the consolidated financial statements. In addition, they revealed that the impact of first time adoption of IFRS on the performance of the Romanian listed companies differs from one entity to another. Senyigit (2012) has examined the implementation of IFRS in the Turkish insurance industry. The study has reported that there is no difference in the equity of sample companies before and after the IFRS adoption. Ferentinou and Anagnostopoulou (2016) have studied the impact of IFRS adoption and accrual based earnings management (AEM) and real earnings management (REM) in Greek firms. Results of the study reveal that there is a statistically significant shift from AEM to REM after the adoption of IFRS in 2005. In the context of Romania Brad, Dobre, Turlea, and Brasoveanu (2014) have found that the adoption of IFRS in Romania affects the performance of the companies which are going to apply them for the first time. Mironiuc, Carp, and Chersan (2015) have carried out a study based on the data collected from 65 Romanian companies listed in the Budapest Stock Exchange from 2011-2012. Empirical results show that the usefulness of financial information in the Romanian financial market was increased after the adoption of IFRS. Mhedhbi and Zeghal (2016) have examined the association between the adoption of IAS and performance of emerging capital markets based on the data of 31 developing countries. Findings of the study highlight that the performance of emerging capital markets is significantly and positively associated with IAS/IFRS use. Santos, Favero, and Distadio (2016) have investigated the adoption of IFRS on financing structure in emerging economies. It reveals that the impact of IFRS adoption in financing decisions is heterogeneous among companies from different regions and different countries. Kim and Ryu (2018) have investigated the impact of mandatory IFRS adoption on capital markets using a sample of listed Korean companies during the period 2000-2013. Results of the study showcase that there is a significant reduction in the cost of equity capital in Korean listed companies after the mandatory IFRS adoption in 2011 when market variables were controlled. In Indian context, Susruth (2016) has carried out a study on the effects of adopting IFRS on financial statements. The author has concluded that IFRS would increase the comparability between financial statements of various companies. Sampaio, Netto, and Silva (2017) based on 595 Brazilian firms from 2004 to 2015 studied the relationship between mandatory IFRS adoption and firm value. The findings of Sampaio et al. (2017) highlighted that there is a positive relationship between net income and firm value. Hessayri and Saihi (2018) have explored ownership dynamics around IFRS adoption on public listed firms in three emerging countries namely Morocco, South Africa and Turkey. Findings of the study reveal that there is an increase in equity holdings following the IFRS adoption. The impact of adopting IFRS on the financial activities of companies in India was studied by Shukla (2015) using a sample of 10 companies for 5 years (i.e., 2010/2011 to 2014/2015), and it was revealed that there is no significant improvement in financial risk, investment activities, operating activities and debt covenants resulting from IFRS adoption.

In Germany, Leuz and Verrecchia (2000) have examined the impact of accounting practices on listed companies in the Deutscher Akitiendex Index in 1998. They found that factors like firm size, firm needs, and financial performance significantly explain the decision of adopting IAS. Perramon and Amat (2006) have examined the effects of IFRS adoption on listed companies in Spain. The authors have documented that adopting IFRS in non-financial Spanish companies has diverse effects on the company profit. Daske (2006) studied the economic benefits of adopting IFRS using data of 735 German companies. In this regard the author has found that changing of local accounting toward international accounting did not cause an economic benefit. In Portuguese context a study by Silva and Couto (2007) has examined the impact of IFRS on financial information of firms listed in the Euronext Lisbon Eurolist. Findings of the study reveal that the structure of consolidated balance sheet and income statement has undergone a considerable change in the measurement of firm performance and financial position. Hung and Subramanyam (2007) have examined the effects of adopting IAS on financial statements in the German context. They have disclosed that total assets and net book value of equity as well as net income variation were significantly higher under the IFRS than German Accounting Rules using a sample of German companies from 1998 to 2002. O'Connell and Sullivan (2008) have investigated the impact of mandatory conversion to IFRS on the net income of FTSEurofirst 80 firms and found that there is an important increase in the net income after the conversion. Latridis (2010) has found that the implementation of IFRS in the UK has a favorable effect on financial performance of the company. Armstrong, Barth, Jagolinzer, and Riedl (2008) have examined market reactions to 16 events associated with the adoption of IFRS in Europe. The results of the study indicate that there is a more positive reaction for firms with lower quality pre-adoption information whereas the reaction is less positive for firms dominated in code law countries. The authors have also found a positive reaction to IFRS adopting events for firms with high quality pre-adoption information. A noteworthy finding in the same study revealed that investors in European firms perceived net benefits associated with IFRS adoption. As cited in Umobong (2015), Jeanjean and Stolowy (2008) have mentioned that there is no indication of decrease in earnings management for firms in Australia, France, and the UK where IFRS adoption is mandatory. In Japan Sato and Takeda (2017) have examined the firms' decision to voluntarily adopting IFRS in a setting where there are changes to the governance system in a traditionally code law country and how market responds to such decisions based on the listed companies on the Japanese Stock Exchange during 2010-2016.The results show that stock prices are more likely to increase for IFRS adopters around the events that promote adopting IFRS than the non-adopters. The authors further indicate that market reactions are similar for firms that feature a nominating committee and are included in the new market index. Franzen and Weibenberger (2018) have reported that no unique effects of the mandatory adoption of IFRS 8 for German companies.

The literature review carried out thus reveals an existence of mixed findings on the impact of IFRS adoption and firm performance. In this regard some studies have reported positive impact from IFRS adoption on firm performance (i.e., Armstrong et al., 2008; Khaled & Khlif, 2016; Latridis, 2010). In contrast several studies (i.e., Abdullahi et al., 2017; Kim & Ryu, 2018; Umobong & Ibanichuka, 2016) have found negative impact from IFRS adoption on firm performance. Meanwhile, Franzen and Weibenberger (2018) report inconclusive evidence on the impact of IFRS adoption on firm performance. It is apparent that there is a growing tendency in many countries to investigate the impact of IFRS adoption on firm performance (Umobong, 2015; Santos et al., 2016; Sampaio et al., 2017; Franzen & Weibenberger, 2018). Having considered dearth of such studies in Sri Lanka and the appearance of various contextual factors which hinder the replication of extant research findings related to other countries on IFRS adoption and its impact on firm performance, the present study attempts to examine the impact of mandatory IFRS adoption on firm performance of Sri Lankan listed companies.

3. Methodology

3.1 Sample and data

Preparation of financial statements as per the guidelines of IFRS became mandatory for Specified Business Enterprises of Sri Lanka from 01.01.2012.

Out of the Specified Business Enterprises as classified by Sri Lanka Accounting and Auditing Standard Board, this study purposefully selected all the companies listed in the CSE. In this respect data of all 294 companies which maintained their listing status by 31st March 2016 were collected. Sample period for the study was 2010 to 2016 which includes data of pre-IFRS adoption period (2010 and 2011) and post-IFRS adoption period (2012-2016). However, data of 96 companies were eliminated (198 retained) as such companies were not listed on the CSE during both pre and post-IFRS adoption periods. Secondary data related to financial performance of firms were collected from audited financial statements of selected listed companies for the study. Further, the stock market performance of the companies was computed based on stock market data available in the CSE data library.

3.2 Hypothesis

Financial statements which were prepared using financial reporting standards as recommended by the ICASL were selected for this study. Therefore, financial information presented in financial statements is the input of different financial indicators calculated to measure financial performance of a firm. Moreover, there are different stakeholders of the firm including investors who make their decisions based on information presented in financial statements. Arguably, the information created in financial statements using financial reporting standards are reflected in stock market performance of a firm. The same construction was studied by Khaled and Khlif (2016) in Libiya and found that IFRS adoption contributes to an advancement of stock markets. The authors such as Kim and Ryu (2018) and Sato and Takeda (2017) could be taken as examples to evident this association. Moreover, the past researchers such as Silva and Couto (2007) found that there is a significant change in firm performance measured through financial information of firms before and after the IFRS adoption. Corresponding to these establishments in prior research, the present study develops the following hypothesis to be tested using the data of selected firms for the study.

H_1: There is a significant change in firm performance after the IFRS adoption in which

- H_{1a}: There is a significant change in financial performance of firms after the IFRS adoption
- H_{1b}: There is a significant change in market performance of firms after the IFRS adoption

There are two variables used in H_1 of the study. They are financial performance and market performance. The study uses two indicators for financial performance namely productivity and profitability of firms. According to Pal and Soriya (2012) productivity of the firm is measured through asset turnover ratio (ATO) (Revenue/Total Assets). Profitability of the firm is measured using two measures such as ROA and ROE. ROA is used to gauge the efficiency of using given assets by the managers to create value to the firm. ROE is more referred by the owners of the firm to measure the portion of value addition done by the firm on their investments. According to Espinosa et al. (2015), ROA is calculated as a ratio of earnings before interests and tax divided by average assets of the firm. ROE is net income of the firm divided by average equity (Espinosa et al., 2015). Market performance of the firm is measured using annual share return of the firm. The following formula is used in this respect:

$$\text{ASR} = \frac{P_1 - P_{t-1}}{P_{t-1}}$$

ASR = Annual share return
P_t = Market Price at the end of the year
P_{t-1} = Market Price at the beginning of the year

3.3 Sample and data

Preparation of financial statements as per the guidelines of IFRS became mandatory for Specified Business Enterprises of Sri Lanka from 1 January 2012. Out of the Specified Business Enterprises as classified by Sri Lanka Accounting and Auditing Standard Board, this study purposefully selected all the companies listed in the CSE. In this respect, data from all 294 companies which maintained their listing status by 31 March 2016 were collected. Sample period for the study was 2010 to 2016 which includes data of pre-IFRS adoption period (2010 and 2011) and post-IFRS adoption period (2012-2016). However, data of 96 companies were eliminated (198 retained) as such companies were not listed on the CSE during both pre and post-IFRS adoption periods. Secondary data related to financial performance of firms were collected from audited financial statements of selected listed companies for the study. Additionally, the stock market performance of the companies is computed based on stock market data available in the CSE data library.

3.4 Data analysis

To examine whether there is a significant difference between mean values of performance indicators of pre-IFRS adoption sub sample and post-IFRS adoption sub sample, paired sample *t*-test was carried out for all performance indicators. Using the results of the analysis, the following hypothesis was tested in order to affirm H_{1a} and H_{1b} of the study.

H_0: True mean difference between paired samples is zero
H_1: True mean difference between paired samples is not equal to zero

4. Empirical results

Before employing paired sample *t*-test to draw empirical evidence to test hypothesis, the collected data for this study are summarized and presented using descriptive statistics. Table 1 presents a comparison of descriptive statistics of data related to pre-IFRS (Pre) and post-IFRS (Post) adoption periods.

Table 1: Descriptive statistics

	ATO		ROA		ROE		ASR	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
Mean	0.67	0.73	0.05	0.08	0.04	0.06	0.01	0.03
Maximum	3.24	6.23	0.60	1.05	0.43	0.62	1.24	12.84
Minimum	0.01	0.00	-0.25	-0.26	-0.97	-0.83	-0.92	-0.94
SD	0.63	0.78	0.10	0.13	0.10	0.12	0.31	0.63
Skewness	1.51	3.05	1.67	3.61	-3.17	-0.66	0.62	14.23
Kurtosis	5.65	18.12	10.69	24.69	38.07	17.59	4.71	28.18

Note: Number of observations is 396 and 792 in pre and post IFRS adoption periods, respectively

According to Table 1, average value of all performance indicators of selected firms for this study has increased after adopting IFRS. Maximum level of performance of firms has also been increased after adopting IFRS whilst, the minimum level of performance has been almost consistent before and after adopting IFRS. This pattern indicates that some companies have managed to yield extremely high performance. Increase in standard deviation (SD) values and the change in skewness values related to all performance indicators in post-IFRS adoption support the above observation. Moreover, a drastic increase in kurtosis value of performance indicators (except for ROE) during post-IFRS adoption period indicates that performance of selected firms have started to gather around the mean value. As stated in the previous section, the study uses paired sample *t*-test to draw empirical evidence to test the hypothesis of the study.

The test results are summarized in Table 2. Before performing the test, data of 34 companies were removed from the sample in order to address the observed extreme values in the data set.

Table 2: Summary of paired sample *t*-test results

	Mean		Mean difference	*t*-statistic	*p*-value
	Pre	**Post**			
ATO	0.719	0.850	-0.131	-3.867	0.000
ROA	0.076	0.096	-0.020	-3.699	0.000
ROE	0.057	0.087	-0.030	-3.048	0.003
ASR	0.029	0.530	-0.501	-4.286	0.000

Note: Degree of freedom is 163

According to test results presented in Table 2 there is a statistically significant increase in the mean values of financial (ATO, ROA and ROE) and market (ASR) performance after adopting IFRS by selected firms for the study. As evident in Table 1 the mean values of all performance indicators have increased in the post-IFRS adoption period. Therefore it could be concluded that H_{1a} (there is a significant change in financial performance of firms after the IFRS adoption) and H_{1b} (there is a significant change in market performance of firms after the IFRS adoption) can be established in relation to the listed companies in the CSE.

5. Discussion and conclusion

Before adopting IFRS, Sri Lankan companies used to follow Generally Accepted Accounting Principles. From 2012 onwards, Sri Lankan companies adopted IFRS. Corresponding to this changeover, the objective of the study was to examine whether there is a significant change in firms' performance after adopting IFRS. Based on the test results of the study it is apparent that there is a significant change in both financial and market performance of listed companies in the CSE, Sri Lanka. According to empirical results of the study, it is evident that there is a statistically significant increase in both financial and market performance of listed companies in the CSE, Sri Lanka.

Reflecting on the findings of the present study, it could conclude that Sri Lankan companies and policy making bodies have adequately fulfilled the above key success factors in making a significant effect from IFRS adoption on firm performance. Further, it was evident in the study that firms' performance has been increased upon IFRS adoption in Sri Lanka. The introduction of new, improved and comprehensive accounting standards under IFRS has allowed investors to trust on the accuracy of the comparability of firms' performance in making their portfolio investment decisions. Regulatory bodies such as Securities and Exchange Commission in Sri Lanka, CSE and ICASL can use the findings of the present study to attract foreign investors by effectively communicating the effects of IFRS adoption on firm performance. So far the preparation of financial statements according to IFRS is mandatory for SBEs in Sri Lanka and a large number of organizations either do not prepare financial statements at all or prepare according to previous accounting regulations existed before introducing IFRS. Therefore, the regulatory bodies may take necessary steps to educate such organizations about the benefits of preparing financial statements using IFRS to improve their accounting practices as evident in the present study.

The finding of a significant increase in firm performance related to both financial performance and market performance after the IFRS adoption can be compared with similar studies reported in literature. The findings of Latridis and Rouvolis (2010) are consistent with the present study with a highlight of firms' financial measures improved significantly in the subsequent period of IFRS adoption in Greece. This finding is contradictory to a negative impact on firm performance after the IFRS adoption in selected developing countries as reported in Khaled and Khlif (2016). In contrast to the findings of the present study, Black and Maggina (2016) documented that IFRS adoption has not improved statistical behavior of financial ratios of selected Greek companies. Furthermore, the same authors have reported that the level of usefulness of financial statement data in Greece has not improved upon adaptation of IFRS. Pascan and Turcus (2012) have revealed that the impact of first-time adoption of IFRS on performance of Romanian listed groups differs from one entity to another. They have also found that the IFRS adoption has generated, in some cases, a slight increase or decrease of net income reported in the consolidated financial statements, but also a dramatic increase in net income for one analyzed entity. The reasons that they highlighted were size of entities, their field of activity that can stimulate the adoption of favorable provisions of IFRS or to the conditions of IFRS adoption mandatory or voluntary. According to Schipper (2005), such contrasting effects are possible due to different cultures, legal requirements and financial systems. Santos et al. (2016) have carried out a study on the adoption of IFRS on companies financing structure in emerging economies. It is stated that the impact of the adoption of IFRS in financing decisions is heterogeneous among companies from different regions and countries. In this respect, the findings of the present study would evident the robustness of their findings. According to the same authors, the said effect is clearer when country controls are applied to monitor the legal enforcement and investor safety, such as the quality of the boards and accounting audits. According to Tokar (2005) achieving real image of accounting standards is a costly and time consuming objective. It requires the participating organizations and standard setting agencies to imagine the future and build new policies, links and committees to create a real impact from new standards. It is also stated in the same study that adopting IFRS requires a huge investment in money, people and institutional leadership, and a significant change in the training of accounting students and accounting professionals.

This study is not free from certain limitations. As Sri Lanka is a developing country, the findings of this study would not be directly applicable for developed and some emerging countries. There was a practical difficulty in finding data before the adoption of IFRS (i.e., before 2010). Hence, the sample period for pre-IFRS adoption was limited to two years (2011 – 2012). Given the quantitative approach in the study, the perceptions and viewpoints of interested parties on IFRS adoption are not contained in the study. Despite the above limitations, the present study adds new attributes to existing literature on how mandatory IFRS adoption influences firm performance of listed companies in Sri Lanka. Future researchers could pay attention to design their studies to address the above limitations and at the same time, comparative studies on different countries can be conducted to seek what key differences exist in IFRS adoption and how differently the adoption makes changes in overall organizational conduct.

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The impact of IFRS adoption on value relevance of accounting information: Evidence from a developing market

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Abstract

The present study investigates the impact of IFRS adoption on value relevance of accounting information of listed companies in Sri Lanka. The study employs a quantitative research design for the investigation. Value relevance of accounting information is measured using Ohlson (1995) model. In this model, value relevance is measured under two sub categories such as price value relevance and return value relevance. Data for the study was collected from annual financial statements and Colombo Stock Exchange (CSE) reports of all listed companies from 2008 to 2017. The study found that the price value relevance of Sri Lankan firms' has increased whilst the return value relevance has decreased upon adopting IFRS. Further it found that value relevance of book value of equity has increased, value relevance of operating cash flows has not changed, and value relevance of earnings has decreased after the IFRS adoption. This resembles recent research findings on IFRS that give more prominence to financial position (balance sheet items), and that investors pay more attention on book value of the firm than earnings in their decision making. It could conclude that book value plays a more important valuation role and earnings play a less important valuation role under IFRS than previously used Sri Lanka Accounting Standards in investment decisions. The study adds empirical evidence on the impact of IFRS on value relevance of accounting information in a developing country context where almost all prior studies attempted to provide same evidence in relation to developed and emerging countries. Given the contextual differences of developed and emerging countries and developing countries, the findings of this study offer a better understanding on the status of the influence of IFRS adoption on value relevance of accounting information in a developing market.

Keywords: Colombo Stock Exchange, IFRS, IFRS adoption, Sri Lanka, Value Relevance

1. Introduction

Financial statements are one of the key information sources for companies to communicate with their stakeholders. Despite the availability of additional

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information sources, financial statements still remain as the most important externally feasible source of information on companies for the stakeholders including existing and potential investors. According to Chalmers, Navissi, and Qu (2010), a critical challenge for any economy is the allocation of savings to investment opportunities. Given information asymmetry, matching savings to business opportunities is complicated because firms typically have better information than investors on the value of business investment opportunities. According to Healy and Palepu (2001) financial reporting and disclosures are potentially important means for management to communicate firm performance and governance to outside investors. Given this importance of financial statements, financial accounting numbers are expected to provide relevant and useful information to stakeholders who use financial statements. In considering financial statements, accounting standards is an integral part of them, since accounting standards provide guidelines to prepare financial statements. Preparation of financial statements according to relevant set of accounting standards ensures the provision of relevant and reliable financial and accounting information to investors and other stakeholders to make their decisions. In fact, which figures at which amounts to be presented in financial statements and also which disclosures should be made in the financial statements basically depend on the requirements of relevant accounting standards. Therefore, according to Ahmed, Chalmers, and Khlif (2013), accounting regimes and generally accepted accounting principles play a crucial role in shaping the preparation and presentation of financial information to external users who rely on this information for decision-making.

According to Barth, Beaver, and Landsman (2001), an accounting amount is defined as value relevant if it has a predicted association with equity market values or it is the association between market and accounting numbers. Francis and Schipper (1999) define value relevance as the ability of accounting numbers to summarize information underlying the stock prices, thus value relevance is indicated by a statistical association between financial information and prices or returns. In the last few decades, there was a claim that the financial statements have lost their value relevance overtime in the world. According to Lev and Zarowin (1999), usefulness of reported earnings, cash flows, and book (equity) values has been deteriorating over the past 20 years basically due to both the increased importance of unreported intangible assets and the failure of the financial reporting models to keep pace with and reflect the increased rate of change in the business environment. According to Francis and Schipper (1999), this situation might result either because accounting standards and practices have remained stagnant while businesses have changed, or because accounting standards and practices have changed in ways that diverge from providing value relevant information, or both. Stewart as cited in Balachandran and Mohanram (2011), has attributed this decreased value relevance to growing omission of the intangible assets created by research and development and advertising. According to Stewart, accounting is no longer counting what counts. Therefore, significant changes to the existing financial reporting system were demanded in the value relevance literature.

Another criticism attributed to the decreasing value relevance of financial statements was the increasing globalization of the world and thus local accounting systems fail to satisfy the financial and accounting information needs of the global stakeholders. According to Samaha and Khlif (2016), globalization of the world economy has brought to the forefront the problems engendered by differences in accounting reports used in many different countries. The growing internationalization of economic trade and the globalization of businesses and financial markets, financial information prepared according to a national accounting system may no longer satisfy the needs of users whose decisions are more and more international in scope (Zeghal & Mhedhbi, 2006). Thus, the quest for international harmonization of accounting standards and practices has been widely accepted as expedient and pragmatic (Samaha & Khlif, 2016).

In response to these claims of declining value relevance of financial statements over time, several initiatives have been put forward while the adoption of IFRS (both old and revised) represents a significant milestone in the international accounting environment. It also has a significant impact on the value relevance of financial reporting through which harmonization of accounting standards and practices on an international scale are trying to achieve. The International Accounting Standards Board (IASB), being the international accounting standard setting body, addressed this challenge by developing a high quality, internationally recognized set of accounting standards that brings transparency, accountability and efficiency to financial markets around the world. Currently, more than 166 countries around the globe have made a public commitment to IFRS standards as the single set of global accounting standards. Crawford et al. as cited in Uzma (2016) has attributed the transition from rule-based accounting systems to the IFRS accounting principles is to promote more consistency, credibility, relevance of accounting information and the globalization of economies. According to Jeanjean and Stolowy (2008), with the globalization of international financial markets, the idea of adopting a common language for financial reporting to develop international comparability has become widespread and of all the possible ways of implementing a single financial reporting language, adoption of IFRS was the approach selected by Europe and many other countries.

Keeping in line with this global trend, The Institute of Chartered Accountants of Sri Lanka (ICASL), which is the jurisdictional authority for setting accounting standards in Sri Lanka also mandated the adoption of IFRS for all the listed companies and other Specified Business Enterprises (SBE) in Sri Lanka by issuing Sri Lanka Financial Reporting Standards (SLFRS) and Sri Lanka Accounting Standards (LKAS) which are compatible with IFRS, for annual financial periods beginning on or after 1st of January 2012.

The adoption of IFRS around the globe has inspired the researchers to investigate the impact of IFRS adoption on financial reporting and capital market efficiency. It is argued that application of a single set of high quality accounting standards around the globe leads to better functioning of capital markets. According to Ball (2006), mandatory IFRS adoption has the potential to facilitate cross-border comparability, increase reporting transparency, decrease information costs, reduce information asymmetry, and thereby increase the liquidity, competitiveness, and efficiency of markets. But these benefits could be achieved through IFRS adoption only if IFRS provide superior information for market participants than the previous sets of local accounting standards. However, the extant accounting literature on this contains a handful and conflicting empirical evidence. Some studies (see Agostino, Drago, & Silipo, 2011; Hung & Subramanyam, 2007; Tsalavoutas & Dionysiou, 2014) have found that IFRS adoption increases the value relevance of financial statements. Meantime studies such as Paananen (2008), Callao and Jarne (2010), and Garanina and Kormiltseva (2013) documented that IFRS adoption does not make a significant change in value relevance of financial statements. The same observation was made in Okafor, Anderson, and Warsame (2016) as they state that existing findings in the literature on the impact of IFRS adoption on value relevance of accounting information is mixed. Moreover, there is a dearth of studies available for Sri Lankan companies and existing evidence cannot be replicated as contextual factors of a country contribute immensely in deciding success of IFRS adoption (Ismail, Kamarudin, Van Zijl & Dunstan, 2013). Therefore the present study attempts to examine whether the financial statements prepared under IFRS in Sri Lanka are value relevant, and to investigate whether the value relevance of financial statements has improved from pre-IFRS adoption to post-IFRS adoption period in Sri Lanka.

Remainder of the paper is organized as follows. Section 2 of the paper reviews relevant past studies on the impact of IFRS on value relevance of accounting information. Section 3 develops hypotheses and explains methodological concerns of the study. Findings of the study are presented in Section 4, and Section 5 concludes the paper.

2. Literature review

Despite widespread adoption of IFRS by many countries, little research has directly addressed the impact of IFRS adoption on the quality of financial reporting in emerging markets (Ismail et al., 2013). Okafor et al. (2016) reported that yet few empirical studies have examined the effects of the mandatory adoption of IFRS on the relevance of accounting information. Further, the same authors have stated that such empirical studies carry mixed results. Therefore literature on the effects of IFRS adoption on the value relevance of financial information is, at best, inconclusive. According to Chalmers, Clinch, and Godfrey (2011) many countries and firms devote ample amount of resources to IFRS adoption foreseeing its ability to provide quality information for managers, accounting report preparers, regulators and investors to draw rational decisions.

With the same expectation several studies have conducted in developed countries to investigate the impact of IFRS adoption on value relevance of accounting information. Most of them have reported an increase of value relevance of accounting information upon IFRS adoption (see Agostino et al., 2011; Chalmers et al., 2011; Gjerde, Knivsfla, & Saettem, 2008; Hung & Subramanyam, 2007; Morais & Curto, 2009; Okafor et al., 2016; Seng

Cheong, Kim, & Zurbruegg, 2010; Tsalavoutas & Dionysiou, 2014). Meanwhile some studies have concluded that there is no improvement or decrease of value relevance upon IFRS adoption in the context of developed countries (see Callao & Jarne, 2010; Devalle, Onali, & Magarini, 2010; Garanina & Kormiltseva, 2013; Goodwin, Ahmed, & Heaney, 2008; Paananen, 2008).

Since the introduction of IFRS, its adoption was problematic in emerging and developing countries as there were contradictory arguments for and against the IFRS. According to Chebaane and Othman (2014) the adoption of IFRS in developing economies was controversial because on one hand IFRS are considered as developed standards which require a high level of economic development to implement them successfully. Perera (1989) argued that accounting is a product of its environment and a particular environment is unique to its time and locality thus IFRS are not suitable for developing countries because these standards are very complicated, and influenced by Anglo-American culture. Hofstede as cited in Ismail et al. (2013) found that developing countries are substantially different from developed markets in terms of the institutional, organizational and market aspects of the economy and society. According to Zehri and Chouaibi (2013) the most favorable developing countries to adopt IFRS are the countries with a high economic growth rate, a high level of education and a common law based legal system. Tyrrall, Woodward, and Rakhimbekova (2007) claimed that IFRS were developed in advanced economies and increasingly being applied in emerging economies by potentially ignoring the considerations of whether IFRS are appropriate or relevant to such economies.

Some researchers have highlighted the benefits of adopting IFRS in emerging and developing countries. According to Tyrrall et al. (2007) advantages to developing nations of harmonizing IFRS include: the elimination or reduction of set-up costs in developing national accounting standards; the potential for rapid national improvement in the perceived quality and status of financial reports; increase in market efficiency in (inter)national financial markets through the provision of more understandable, comparable, and reliable financial statements; and a reduction in the cost to firms of preparing financial statements. Wolk, Francis, and Tearney (1989) argue that international accounting harmonization is beneficial for developing countries as it provides them with better-prepared standards as well as the best quality accounting framework and principles.

While having these contradictory arguments on the adoption of IFRS in emerging and developing countries IFRS are increasingly being applied in emerging and developing nations. In recent years many developing countries have adopted IFRS despite the cognition of the view that if accounting and reporting systems are to be effective (Samaha & Khlif, 2016). Despite the widespread adoption little research has directly addressed the impact of IFRS adoption on the quality of financial reporting of emerging and developing markets (Ismail et al., 2013). According to Samaha and Khlif (2016) evidence on the economic consequences of IFRS is still limited in developing countries. Garanina and Kormiltseva (2013) highlighted that limited research on the impact of IFRS adoption on value relevance of accounting information in emerging markets. Despite the growing adoption of IFRS by emerging economies and developing countries little attention is assigned to study the consequences of IFRS adoption on value relevance of accounting information (Chebaane & Othman, 2014).

Therefore investigating the impact of IFRS adoption on the value relevance of accounting information in the context of a developing country would address this important gap in the literature as following reasons exist. First, there has been a considerable debate over the value relevance of accounting information prepared under IFRS compared to the local sets of accounting standards (Alali & Foote, 2012). Second, although many developed countries have adopted IFRS from the beginning in preparing financial statements and large number of studies have provided empirical evidences on the impact of IFRS adoption on the value relevance in the context of developed countries, those findings may not be applicable in the context of emerging and developing countries. Because of the differences exist between developed and developing countries in terms of the institutional, organizational and market aspects of the economy and society (Ismail et al., 2013). Third, it has been argued in the literature that IFRS are highly developed standards, which require high level of economic development in order to successfully implement (Chebaane & Othman, 2014; Tyrrall et al., 2007*)*, and IFRS are not suitable for developing countries as these standards are highly complicated (Perera, 1989). Fourth, many developing countries have adopted IFRS in recent years by ignoring the considerations of whether IFRS are appropriate or relevant to such economies (Samaha & Khlif, 2016; Tyrrall et al., 2007). Fifth, little research has directly addressed the impact of IFRS adoption on the quality of financial reporting in emerging and developing markets (Ismail et al., 2013; Chebaane & Othman, 2014), and few empirical studies which have examined the effects of the mandatory adoption of IFRS on the relevance of accounting information also present mixed results (Okafor et al., 2016). Further, the findings of such research may not be applicable to another country like Sri Lanka since the value relevance of accounting information is affected by country-specific factors (Ali & Hwang, 2000; Barth et al., 2008; El-Gazzar & El-Sadek, 2001). Therefore the present study examines the impact of IFRS adoption on value relevance of accounting information in a developing market using data of listed companies on CSE, Sri Lanka.

3. Methodology

3.1 Hypotheses

Despite mixed results, extant literature suggests that IFRS adoption leads to an improvement in value relevance of accounting information. There is a number of studies documents a positive impact from IFRS adoption as it improves the qualitative characteristics of accounting information such as understandability (Ball, 2006; Barth et al., 2008), comparability (Ball, 2006; De George, Li, & Shivakumar, 2016), timeliness (Ahmed et al., 2013; Tan, Wang, & Welker, 2011), verifiability (Ball, 2006; Daske, Hail, Leuz, & Verdi, 2008), relevance

(Garanina & Kormiltseva, 2013; Lantto & Sahlström, 2009; Tan et al., 2011) and faithful representation (Ball, 2006; Daske et al., 2008; Tan et al., 2011).

According to Eisenhardt (1989) agency theory is directed at the ubiquitous agency relationship in which one party (the principal) delegates work to another (the agent) who performs that work. Agency theory is concerned with resolving problems that can occur in agency relationships. Here the agency problem arises when desires or goals of the principal and agent conflict and it is difficult or expensive for the principal to verify what the agent is actually doing (Eisenhardt, 1989). One of the most common agency relationships exists is manager – shareholder relationship where interests of principal and agents are separated and imposing agency costs. Shareholders expect the provision of relevant, reliable and useful information in financial statements about the resources entrusted to management and the performance of management. However, this expectation may not always be met by the management and they may tend to work in the interest of themselves rather the interest of shareholders. There would be a conflict between these two parties because the principal (shareholder) is not aware of actions of the agent (manager) and shareholders are restricted from accessing information which is available to managers. Given this conflict, according to Samaha and Khlif (2016), managers' accounting choices and disclosure of financial information has been investigated using agency theory which posits that accounting choices and disclosure are used to reduce agency cost and thus information asymmetry exists between principal and agent. In listed companies, the main source of information available to shareholders is financial statements. Therefore, management is expected to provide accurate, understandable, reliable and relevant information to shareholders on the firm performance in order to assist them on future investment and other decisions. With the adoption of IFRS, as discussed, the quality of accounting and financial information is expected to be increased which will enable shareholders to take more informed decisions on their current and prospective investments.

Spence (2002) analyzed the signaling theory in respect of information structure of markets and found an information asymmetry between two parties. As explained under agency theory, in the business world there would be a principal agent conflict because of the information asymmetry between shareholders (principal) and management (agent). According to Watson, Shrives, and Marston (2002) signaling is a reaction to informational asymmetry in markets. In this case companies have information that investors do not have. This can be led to take wrong decisions by the users of financial statements. According to Healy and Palepu (2001) one of the main reasons for demanding financial reporting is due to this information asymmetry and agency principal conflict. Thus, financial information plays a critical role in minimizing this information asymmetry and ensure the efficient functioning of capital markets (Chalmers et al., 2010). With the adoption of IFRS the quality of accounting and financial information is expected to be increased. Further this will enable shareholders to receive more quality signals on the business firms in minimizing the information asymmetries and improving the value relevance of accounting information.

Accordingly, the following hypotheses (*H_1*, *H_2*, *H_3* and *H_4*) are developed to address the lack of empirical evidence on the impact of IFRS adoption on value relevance of accounting information of selected companies for the study. Since the value relevance is measured using few accounting variables under two value relevance models namely price value relevance and return value relevance, sub hypotheses are also developed under each main hypothesis.

***H_1*: The accounting information of listed companies in Sri Lanka prepared under IFRS is price value relevant**.
H_{1a}: The book value per share (BVPS) of listed companies in Sri Lanka has price value relevance.
H_{1b}: The earnings per share (EPS) of listed companies in Sri Lanka has price value relevance.
H_{1c}: The operating cash flow per share (OCFPS) of listed companies in Sri Lanka has price value relevance.

***H_2*: The accounting information of listed companies in Sri Lanka prepared under IFRS is earnings value relevant**.
H_{2a}: The EPS of listed companies in Sri Lanka has return value relevance.
H_{2b}: The changes in earnings per share (CEPS) of listed companies in Sri Lanka has return value relevance.

***H_3*: Price value relevance of accounting information of listed companies in Sri Lanka has increased after the IFRS adoption.**
H_{3a}: The price value relevance of BVPS of listed companies in Sri Lanka has increased after the IFRS adoption.
H_{3b}: The price value relevance of EPS of listed companies in Sri Lanka has increased after the IFRS adoption.
H_{3c}: The price value relevance of OCFPS of listed companies in Sri Lanka has increased after the IFRS adoption.

***H_4*: Return value relevance of accounting information of listed companies in Sri Lanka has increased after the IFRS adoption**
H_{4a}: The return value relevance of EPS of listed companies in Sri Lanka has increased after the IFRS adoption.
H_{4b}: The return value relevance of CEPS of listed companies in Sri Lanka has increased after the IFRS adoption.

3.2 Sample and data

ICASL mandated the adoption of IFRS for all the listed companies and other Specific Business Entities in Sri Lanka from 1st January 2012. All 294 listed companies on the CSE were considered in collecting data for the study. Sample period of the study was 2007/2008 to 2017/2018 which includes pre-IFRS adoption period (2007/2008 – 2011/2012) and post-IFRS adoption period (2012/2013 – 2017/2018). Data related to accounting variables were extracted from audited annual financial statements of the companies and variables on stock market performance were calculated using the data available in CSE data library. However data of 50 companies were excluded

(244 retained) due to unavailability of financial statements or stock market information during the sample period.

3.2 Model specification

This study initially uses two models based on the model suggested by Ohlson (1995) which is the most extensively used model in the value relevance literature. According to Ohlson value relevance is measured under two sub categories namely price value relevance and return value relevance. Price value relevance model is one of the commonly used regression model in literature to measure the value relevance to examine the relationship between market value of equity with accounting numbers such as book value of equity per share, earnings per share and operating cash flow per share. Following Ball and Brown (1968), El Shamy and Kayed (2005), Liu, Gould, and Burgan (2014), Musthafa and Jahfer (2013), Ohlson (1995), Okafor et al. (2016) and Turel (2010) the present study examines price value relevance before and after the IFRS adoption using the explanatory power of book value of equity per share, earnings per share and operating cash flow per share using;

$$\mathrm{P_{it}} = \beta_0 + \beta_1 \mathrm{BVPS_{it}} + \beta_2 \mathrm{EPS_{it}} + \beta_3 \mathrm{OCFPS_{it}} + \mathrm{U_{it}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where, P_{it} is market price per share of firm i, three months after the financial year ending in year t; $BVPS_{it}$ is book value of equity per share of firm i for the financial year ending at year t; EPS_{it} is earnings per share of firm i during the financial year t; $OCFPS_{it}$ is operating cash flows per share of firm i for the financial year ending at year t; and U_{it} is error term.

Balachandran and Mohanram (2011) found that the goodness of fit of the above model can be decreased when there is loss earning firms in the sample. Therefore, an additional dummy variable (D1) is added to the model 1 to control the effect of loss earning firms in developing model 2 of the study. Moreover Pathirawasam (2013) shows that value relevance is higher for larger firms than smaller firms in Sri Lanka. Since the current study uses data of eleven financial years, size of the firm can be changed over time and can have an impact on changes in value relevance. Therefore to control the firm size of the sample firms model 2 incorporates market capitalization (MC) as a proxy variable. Therefore the model 2 is used in the present study to measure price value relevance of selected companies.

$$\mathrm{P_{it}} = \beta_0 + \beta_1 \mathrm{BVPS_{it}} + \beta_2 \mathrm{EPS_{it}} + \beta_3 \mathrm{OCFPS_{it}} + \beta_4 \mathrm{MC_{it}} + \beta_5 \mathrm{D1_{it}} + \mathrm{U_{it}} \ldots \quad (2)$$

Though the share price of a company is an important performance indicator the return arises through the share price fluctuations would be a main consideration once investors have committed their funds in shares of a company. Hence, the impact of accounting numbers on market return of shares which is known as return value relevance is another branch of value relevance. Return value relevance is assessed by regressing the annual returns (R) on earnings (EPS) and changes in earnings (ΔEPS) (Ali & Hwang, 2000; Balachandran & Mohanram, 2011; Liu et al., 2014; Mostafa, 2016; Ohlson, 1995; Okafor et al., 2016). To control the effect of changes in firm size market capitalization (MC) is used as a control variable in model 3.

Accordingly, model 3 of the study is used to estimate the return value relevance of selected companies for this study.

$$R_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 \Delta EPS_{it} + \beta_3 MC_{it} + U_{it} \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The present study examines whether there is a significant difference in value relevance of accounting information between pre and post IFRS adoption periods in the sample. The following statistical test suggested by Clifford, Clogg, Petkova and Haritou (1995) and modified by Paternoster, Brame, Mazerolle, and Piquero (1998) was used in this regard:

$$\boldsymbol{z} = \frac{\boldsymbol{b_1 - b_2}}{\sqrt{\boldsymbol{SEb_1}^2 + \boldsymbol{SEb_2}^2}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Following Ismail et al. (2013) for the robustness of the analysis a regression on the following extended models (models 5 and 6) which include IFRS adoption as a dummy variable and its interaction with each independent variable also used to identify the impact of IFRS adoption on value relevance of accounting information.

$$P_{it} = \beta_{01} + \beta_{11} BVPS_{it} + \beta_{21} EPS_{it} + \beta_{31} OCFPS_{it} + \beta_{41} IFRS + \beta_{51} BVPS_{it} * IFRS + \beta_{61} EPS_{it} * IFRS + \beta_{71} OCFPS_{it} * IFRS + \beta_{81} D_{it} + \beta_{91} MC_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

$$R_{it} = \beta_{02} + \beta_{12} EPS_{it} + \beta_{22} \Delta EPS_{it} + \beta_{32} IFRS + \beta_{42} EPS_{it} * IFRS + \beta_{52} \Delta EPS_{it} * IFRS + \beta_{62} MC_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where; IFRS is an indicator variable coded 1 for observations in the post IFRS adoption period (2012/2013-2017/2018) and 0 otherwise (2007/2008-2011/2012) and all other variables as defined in models 1-3.

4. Empirical results

Descriptive statistics of variables used in the study are presented in Table 1. Values related to pre and post-IFRS periods are presented separately in the Table. According to the Table, mean of BVPS in pre-IFRS period (72.97) has increased in post IFRS adoption period (111.20). Mean EPS for both pre (11.65) and post (10.85) IFRS periods are positive although there is a slight decline in the value during post IFRS adoption period. A noticeable increase of approximately 95% can be seen in the mean of OCFPS in post-IFRS period. Furthermore, skewness of OCFPS has become positive in post-IFRS period which indicates majority of firms reported OCFPS below the mean value whereas some companies maintained very high OCFPS in post-IFRS period. The ΔEPS is measured as the annual change in the EPS compared to the previous year. The mean ΔEPS in pre IFRS (3.60) is positive whereas the mean ΔEPS in post-IFRS (-0.165) is negative. Furthermore, the skewness of ΔEPS has become negative in post-IFRS period which indicates a change in the distribution of this variable upon IFRS adoption. A key observation on the distribution of independent and dependent variables of this study is leptokurtic distributions for all variables. This indicates the values of such variables are gathered around the mean values. Another noticeable observation on the distribution of dependent variables of this study is discernible decrease in their average values in the post-IFRS period reflecting a decline in market share price and market return in post-IFRS adoption period.

Table 1: Descriptive statistics for independent and dependent variables

	Mean		Median		Std. Deviation		Skewness		Kurtosis	
Variable	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
BVPS	72.97	111.20	29.83	39.85	138.69	215.47	4.05	3.46	22.42	16.35
EPS	11.65	10.85	3.52	3.48	33.68	30.29	4.81	2.51	44.57	30.27
OCFPS	5.40	10.66	2.10	2.29	69.38	55.61	-5.64	8.23	103.92	152.22
ΔEPS	3.06	-0.16	0.61	0.11	26.28	23.13	0.43	-1.26	42.13	63.18
MC	21855.80	11722.90	3146.01	2620.82	178763.94	28914.11	22.58	5.78	534.83	44.84
P	260.52	244.31	71.60	55.05	675.10	1077.34	6.88	12.41	67.09	174.70
R	47.81	5.86	9.20	-0.02	340.50	531.19	1.25	12.25	32.06	312.51

Note: Number of observations is 1,220 for pre and 1,464 for post IFRS adoption periods, respectively. BVPS is book value of equity per share, EPS is earnings per share, OCFPS is operating cash flows per share, ΔEPS is changes in earnings, MC is market capitalization, P is market share price, and R is market return.

Before estimating regression models, correlation coefficients between explanatory variables were analyzed to ascertain the absence of multicollinearity problem. The highest coefficient reported for the association between BVPS and EPS (0.51), thus concluded the absence of multicollinearity problem. Im, Pesaran and Shin Test (Im, Pesaran, & Shin, 2003) was used to check the stationarity of the data. Results of the test led to reject the null hypothesis of unit-root for all variables in regression models indicating that variables are stationary at levels. Regression models were estimated in the form of pooled, fixed effects and random effects to select better estimates. Estimates of both fixed and random effects models were affirmed through employing Hausman Specification Test (Hausman, 1978). In instances where both models were found significant the results of random effects model were selected to test hypotheses. In assessing the validity of fixed effects models *F*- redundant test was carried out to check whether fixed effects model or pooled ordinary least squares (OLS) method is more appropriate. All regressions used in the current study are adjusted using Huber-White Sandwich Estimator (White, 1980) as it provides control for heteroscedasticity and auto-correlation.

Table 2 presents the regression estimates for price value relevance of pre and post-IFRS adoption periods. The estimates indicate that BVPS and OCFPS are significantly value relevant in the post-IFRS adoption period. Based on these estimates H_{1a} (the book value per share [BVPS] of listed companies in Sri Lanka has price value relevance) and H_{1c} (the operating cash flow per share [OCFPS] of listed companies in Sri Lanka has price value relevance) of the study can be established. Meanwhile the reported coefficient for BVPS is positive and OCFPS coefficinet is negative. Considering low level of statistical significance reported for EPS coefficient H_{1b} (the earnings per share [EPS] of listed companies in Sri Lanka has price value relevance) of the study cannot be established. According to R^2 value in Table 2 the variables in Model 2 collectively explain 94 percent of the variation in share price of selected firms for the study. Hence, it can be concluded that accounting information is collectively value relevant with market price of shares in the post-IFRS adoption period as predicted in H_1 (the accounting information of listed companies in Sri Lanka prepared under IFRS is price value relevant) of the study.

Table 2: Regression estimates for price value relevance for pre and post IFRS adoption periods

Model 2: $P_{it} = \beta_0 + \beta_1 BVPS_{it} + \beta_2 EPS_{it} + \beta_3 OCFPS_{it} + \beta_4 MC_{it} + \beta_5 D1_{it} + U_{it}$

	Coefficient		***t*-Statistic**		***p* -value**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
Constant	147.483	108.895	4.249	3.346	0.00***	0.00***
BVPS	-0.082	0.845	-0.408	4.193	0.682	0.000***
EPS	6.517	0.704	11.639	1.321	0.000***	0.186
OCFPS	0.158	-0.539	0.753	-3.523	0.451	0.000***
MC	0.0001	0.001	4.686	2.177	0.000***	0.029**
D1	-26.766	0.868	-0.705	0.029	0.480	0.976

	Pre	Post
Adjusted R^2	0.656	0.944
F-statistic	7.46 (0.00***)	65.19 (0.00***)

*Note: Number of observations is 1,220 for pre and 1,464 for post IFRS adoption periods, respectively; estimates are based on fixed effects model; *** is level of significance at 0.01; ** is level of significance at 0.05.*

Table 3 summarizes regression resullts of Model 3 which estimates the return value relevance of accounting information in post-IFRS adoption period. Accordingly the results highlight that CEPS is not significantly value relevant with market return whereas EPS is value relevant with market return. Therefore, H_{2a} (the earnings per share [EPS] of listed companies in Sri Lanka has return value relevance) of the study can be established with a high statistical confidence and H_{2b} (the changes in earnings per share [ΔEPS] of listed companies in Sri Lanka has return value relevance) canot be established. Given a low R^2 of the Model 3 estimates (7%) it can be concluded that accounting information is not collectively value relevant with market return in the post-IFRS adoption period contrarary to the prediction in H_2 of the study.

Table 3: Regression estimates for return value relevance of post-IFRS adoption period

Model 3: $R_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 \Delta EPS_{it} + \beta_3 MC_{it} + U_{it}$

	Coefficient		***t*-Statistic**		***p* -value**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
Constant	23.601	4.263	1.309	0.415	0.190	0.677
EPS	-2.561	0.840	-4.066	2.708	0.00***	0.006***
ΔEPS	10.303	-0.401	12.740	-1.204	0.00***	0.228
MC	0.000	0.0001	4.250	1.048	0.00***	0.294
	Pre	Post				
Adjusted R^2	0.24	0.07				
F-statistic	64.32 (0.00***)	3.083 (0.005***)				

*Note: Number of observations is 1,220 for pre and 1,464 for post IFRS adoption periods, respectively; estimates are based on pooled OLS regression model; *** is level of significance at 0.01.*

Second objective of the study examines whether the value relevance of accounting information has improved from pre-IFRS adoption to post-IFRS adoption period. Therefore, price value relevance and return value relevance estimates for both pre and post-IFRS adoption periods in Tables 2 and 3 are compared. A fundamental question whether the value relevance is significantly increased upon IFRS adoption has been addressed by employing a statistical test suggested by Clifford et al. (1995) (Model 4) and by using extended regression models (Models 5 and 6) which include IFRS adoption as a dummy varable. Calculated *z* values using Model 4 are presented in Table 4. Results of Model 5 and 6 are presented in Table 5 and 6, respectively.

Estimates in Table 2 indicates that explanatory power of accounting variables in price value relevance model has increased from 65% to 94% in the post-IFRS adoption period. Therefore H_3 of the study (price value relevance of accounting information of listed companies in Sri Lanka has increased after the IFRS adoption) can be established**.** It could also observe that only EPS is significantly price value relevant in the pre-IFRS adoption period. However, both BVPS and OCFPS have become significantly price value relevant whereas EPS has become not price value relevant upon IFRS adoption. According to statistics in Table 4 a high *z*-statistic (3.24) for BVPS leads to reject the H_0 of the test (BVPS coefficients in price value relevance model are equal in pre and post sub samples). This concludes that value relevance of BVPS in deciding the market price per share has significantly increased upon IFRS adoption. This is further confirmed by the significance of the interaction term of BVPS with IFRS obtained using Model 5 (see Table 5). Therefore, H_{3a}

of the study (price value relevance of BVPS of listed companies in Sri Lanka has increased after the IFRS adoption) can be accepted. In case of H_{3b} (price value relevance of EPS of listed companies in Sri Lanka has increased after the IFRS adoption) cannot be accepted since its impact become insignificant in post IFRS adoption period. The relevant *z*-statistic (-7.529) in Table 4 and the coefficient for the interaction term of IFRS and EPS in Table 5 confirm this decline in value relevance of EPS upon IFRS adoption. The remaining variable in price value relevance model, OCFPS, which is not significantly value relevant in pre-IFRS adoption period has become value relevant in the post-IFRS adoption period. A low *z*-statistic of 1.46 in Table 4 indicates that this improvement is not statistically significant. The interaction term of IFRS and OCFPS in Table 5 is also not statistically significant. Accordigly, H_{3c} of the study (price value relevance of OCFPS of listed companies in Sri Lanka has increased after the IFRS adoption) cannot be confirmed.

Results in Table 3 evident that explanatory power of accounting variables on market return decreased from 24% to 7%. This is a significant decline in return value relevance upon IFRS adoption which leads to reject H_4 (return value relevance of accounting information of listed companies in Sri Lanka has increased after the IFRS adoption) of the study. Table 3 also indicates that both EPS and ΔEPS are significanly value relevant with the market return in pre IFRS adoption period. However, only EPS is significanltly value relevant in post IFRS adoption period. As per the *z*-statistic (4.85) in panel B of Table 4 the change in coefficients of EPS is statistically significant. This finding can be confirmed with statistically significant positive impact from the interation term of IFRS with EPS in Table 6. Hence H_{4a} (return value relevance of EPS of listed companies in Sri Lanka has increased after the IFRS adoption) can be established. The impact of ΔEPS is significant on return value relevance in pre-IFRS adoption period (see Table 3) and became insignificant in post-IFRS adoption period. A high *z*-statistic for ΔEPS coefficients (-12.4) confirms that this decline is staistically significant. This is further evident in statistically significant negative coefficient of the interaction term of IFRS and ΔEPS reports in Table 6. Subsequently, H_{4b} (return value relevance of ΔEPS of listed companies in Sri Lanka has increased after the IFRS adoption) is rejected.

Table 4: z-statistics for price and return value relevance coefficients

	***Z* –statistic**
Panel A: Price value relevance variables	
BVPS	3.24
EPS	-7.53
OCFPS	1.46
Panel B: Return value relevance variables	
EPS	4.85
ΔEPS	-12.24

Table 5: Impact of the interaction of IFRS with accounting variables on price value relevance

Model 5: $P_{it} = \beta_{01} + \beta_{11}BVPS_{it} + \beta_{21}EPS_{it} + \beta_{31}OCFPS_{it} + \beta_{41}IFRS + \beta_{51}BVPS_{it} * IFRS + \beta_{61}EPS_{it} * IFRS + \beta_{71}OCFPS_{it} * IFRS + \beta_{81}D_{it} + \beta_{91}MC_{it} + \varepsilon_{it}$

	Coefficient	*t*-Statistic	*p* -value
Constant	175.948	6.124	0.000***
BVPS	-0.605	-3.205	0.001***
EPS	5.989	11.328	0.000***
OCFPS	-0.296	-1.447	0.148
IFRS	-54.261	-2.792	0.005***
IFRS*BVPS	1.440	10.655	0.000***
IFRS*EPS	-4.357	-6.094	0.000***
IFRS*OCFPS	-0.318	-1.078	0.281
D1	-8.810	-0.305	0.759
MC	0.000	4.961	0.000***
Adjusted R^2 = 0.772; F-statistic = 24.28 (0.000***)			

*Note: Number of observations is 2,684; estimates are based on fixed effects model; *** is level of significance at 0.01.*

Table 6: Impact of the interaction of IFRS with accounting variables on return value relevance

Model 6: $Y_{it} = \beta_{02} + \beta_{12}EPS_{it} + \beta_{22}\Delta EPS_{it} + \beta_{32}IFRS + \beta_{42}EPS_{it} * IFRS + \beta_{52}CEPS_{it} * IFRS + \beta_{62}MC_{it} + \varepsilon_{it}$

	Coefficient	*t*-Statistic	*p* -value
Constant	23.719	1.750	0.080*
EPS	-2.558	-5.400	0.000***
ΔEPS	10.298	16.936	0.000***
IFRS	-21.913	-1.244	0.213
IFRS*EPS	3.541	5.826	0.000***
IFRS*ΔEPS	-10.669	-13.531	0.000***
MC	0.000	5.666	0.000***
Adjusted R^2 = 0.19; F-statistic = 58.32 (0.000***)			

*Note: Number of observations is 2,684; estimates are based on fixed effects model; *** is level of significance at 0.01; * is level of significance at 0.1.*

5. Discussion and conclusion

The present study found that accounting information generate upon IFRS adoption is price value relevant. This finding is consistent with prior studies such as Ismail et al. (2013), Agostino et al. (2011), Alali and Foote (2012), Devalle et al. (2010), Gjerde et al. (2008), Liu, Yao, Hu and Liu(2011). When individual accounting variables are concerned, BVPS and OCFPS are significantly value relevant with market price, and EPS do not significantly price value relevant. The accounting information of listed companies on the CSE is collectively not return value relevant. This finding corroborates with the findings of Devalle et al. (2010), Goodwin et al. (2008) and Hung and

Subramanyam (2007). However, EPS variable is a significant determinant of return value relevance of selected companies for the study.

Findings of the present study highlight that the price value relevance of BVPS has significantly increased, the price value relevance of EPS has significantly decreased and the price value relevance of OCFPS has not significantly changed upon IFRS adoption. This is consistent with the findings of prior literature (i.e. Kadri, Aziz, & Ibrahim, 2009; Hung & Subramanyam, 2007). Overall, the price value relevance of selected companies for this study has increased in post-IFRS adoption period from its magnitude in pre-IFRS adoption period. A similar finding is evident in Ismail et al. (2013), Agostino et al. (2011), Ahmed et al. (2013), Chalmers et al. (2008), Gjerde et al. (2008), Okafor et al. (2016), Tsalavoutas and Dionysiou (2014) and Turel (2010). Return value relevance of accounting information shows a significant decline between pre and post IFRS periods. This pattern is consistent with the findings of prior studies conducted by Clarkson, Hanna, Richardson, and Thompson (2011), Goodwin et al. (2008), Kadri et al. (2009), Hung and Subramanyam (2007), Morais and Curto (2008).

It was evident in the present study that the value relevance of book value of equity has increased, value relevance operating cash flows has not changed and the value relevance of earnings has decreased upon IFRS adoption in Sri Lanka. In other words, book value plays a more important valuation role and earnings play a less important valuation role under IFRS than previously used local set of Sri Lankan Accounting Standards. The introduction of new, improved and comprehensive accounting standards under IFRS has led to a situation where book value becomes more value relevant than earnings. The reason for this behavior might be related to the fact that investors rely on IFRS financial position figures than IFRS performance figures. The following reason could be responsible for decreasing return value relevance. Introducing new standards or changes to the existing standards by the Institute of Chartered Accountants of Sri Lanka (i.e. LKAS16 Property, Plant and Equipment; LKAS17 Leases; LKAS19 Employee Benefits; LKAS32/39 Financial Instruments; LKAS38 Intangible Assets; LKAS40 Investment Property; LKAS41 Agriculture; SLFRS2 Share Based Payments; SLFRS4 Insurance Contracts, SLFRS3/10 Consolidated Financial Statements; SLFRS13 Fair value Measurement) are oriented towards promoting fair values of net assets rather than earnings.

The present study contains several limitations that the users of research outcomes of the study may be aware though most of such limitations are common in this type of a study. The sample of companies selected for this study is limited to the Sri Lankan context. Hence, care needs to be taken when generalizing the findings to another country as IFRS practices would vary from a country to country due to socio, cultural, economic, political and technological factors. IFRS standards often are revised and new standards are being introduced. The current study does not control for changes in accounting standards over the post IFRS adoption period. The study assumes that all sample firms equally adopt and comply with IFRS, though in practice, there can be compliance differences. The above limitations open several avenues for

future research as mentioned below. Single case studies and cross-country comparative case studies can be carried out to understand the process of IFRS adoption, and perceived benefits, barriers and limitations of IFRS. There are opportunities for future researchers to replicate the present study for other emerging and developing countries to enhance the robustness of present findings. Present study used two models to measure value relevance based on the model introduced by Ohlson (1995) despite there are different models available in the literature to measure the value relevance. This opens another direction for further studies to test and validate whether extant findings in the literature on the impact of IFRS on value relevance varied due to measuring value relevance through different methods.
Implications and incremental contribution of the current study are explained below.

5.1 Theoretical implication

The findings of the current study provide useful evidence in support of several theories adopted in the study. According to the IASB's Conceptual Framework, the main objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity. As per the International Accounting Standards Board, those decisions involve buying, selling or holding equity and debt instruments, and providing or settling loans and other forms of credit. In order to be useful, financial information should be relevant for their decision making and one of the main aspects of measuring the relevance is analyzing the value relevance of them. This study provides supportive evidence of the value relevance of book value of equity and operating cash flows upon IFRS adopting and therefore supports the theory.

5.2 Empirical contribution

Most of the value relevance studies cited in the current study were conducted using the data collected prior to year 2000. Yet, significant changes have occurred in the international accounting environment since that year, specially the adoption of IFRS that are likely to affect value relevance of accounting information. Although, several studies have been carried out to investigate the impact of IFRS adoption on value relevance of accounting information, those have reported conflicting empirical evidences and thus, the literature on the impact of IFRS adoption on value relevance of accounting information is, at best, inconclusive. Since many developed countries have adopted IFRS from the beginning in preparing financial statements of companies, a large number of studies have provided empirical evidences on the impact of IFRS adoption in the context of developed countries. But as per the literature, in case of emerging and developing countries, from the inception, there were contradictory arguments for and against the adoption of IFRS given the differences identified in those countries compared to the developed countries. Still literature shows that, despite these contradictory arguments, IFRS are increasingly being applied in emerging and developing economies, potentially ignoring the consideration whether IFRS are relevant and appropriate to such economies where little attention is assigned to study in the accounting literature. As such, it is important to revisit this area of research using the data from a developing country under the changed accounting environment upon IFRS adoption which is addressed by the current study.

5.3 Practical and policy implications

The findings from this study have practical implications for market participants, particularly for investors and financial analysts, as well as policy implications for standard setters and other regulators. Since the impact of IFRS adoption on the value relevance of accounting information is not adequately investigated in the context of developing countries, investors and other users are not fully informed about the quality and behavior of accounting information following this major change and therefore this may lead to an information asymmetry. As such, the results of the current study provide evidence to them, that financial information prepared under IFRS consist with value relevance information in the context of developing countries which can be effectively used in their investment decisions. In addition, the results suggest that for investors and other users, it is advisable to use information on book values rather than earning in using the financial information prepared under IFRS in their decision making. The findings imply that investors, analysts and other stakeholders should be cautious about using earnings variables in the context of developing countries after adoption of IFRS.

The findings on IFRS impact on the value relevance of accounting information provide valuable insights for policy makers, standard setters and regulators. The study provides robust evidence on the impact of IFRS adoption on the value relevance of accounting information in the context of emerging and developing countries in which the existing value relevance literature is not adequately addressed. Therefore, findings of this study may be useful for emerging and developing countries that are considering adoption of IFRS and for the IASB's agenda of encouraging the adoption of IFRS around the world. The overall findings in relation to IFRS impact on value relevance of accounting information is positive whereas it is significant on book value of equity, but negative for earnings. These findings provide guidance on specific variables to be focused on (i.e. book value versus earnings) when developing future accounting standards for standard setters.

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Business Economics and Finance

A tale of two returns: Stock and investment returns with investment specific technology shocks

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Abstract

This study incorporates capital heterogeneity and investment specific technology (IST) shocks in to a production-based asset pricing model to derive the relationship between aggregate stock returns, aggregate investment returns, equipment and structure investment returns. The model is calibrated to annual and quarterly U.S National Income and Product Account (NIPA) data. Annual structure and equipment investment returns are approximately around 1.003% and 0.99% while the correlation with aggregate stock returns are approximately around 0.62 and -0.41. The risk return trade-off is approximately 47% and 38% for structure and equipment investment returns respectively. Both types of returns significantly forecast economic growth. IST shocks account for approximately 65% of fluctuations in equipment investment returns and around 30% of fluctuations in aggregate investment returns. The model implications support a predictability theory of stock returns.

Keywords: Investment specific technology change; current state of production; relative price of equipment goods; total factor productivity; neutral productivity

JEL Classifications: G12, E23

1. Introduction

There is a plethora of literature concentrated on production-based asset pricing models. However, only a fare few focus on relating asset prices to a firm's investment decision. To our knowledge, this is the first study to develop a production-based asset pricing model incorporating capital heterogeneity and investment specific technology (IST) shocks to investigate the relationship between aggregate investment returns, individual investment returns and the time series behaviour of equilibrium asset returns. The main contribution of this paper is our benchmark production-based asset pricing model which firstly introduces two types of fixed capital: Equipment[2] and Structure. An obvious question that arises at this point would be to inquire why incorporate capital heterogeneity? Incorporating capital heterogeneity is a worthwhile

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[2] Investment in equipment and software consists of capital account purchases of new machinery, equipment, furniture, vehicles, and computer software; dealers' margins on sales of used equipment; and net purchases of used equipment from government agencies, persons, and the rest of the world.

endeavour since it would be very interesting to identify the dynamics of different types of capital, and their respective relationships with each other and aggregate stock returns. Secondly, the study introduces IST shocks in to this setting. IST change plays an important role in generating US growth. The following research questions are posed: What are the risk return trade-offs between different types of Capital? What is the relationship between each type of investment return and economic growth? Are the model implications similar to a production-based model without the above mentioned characteristics (refer Cochrane 1991)? What is the quantitative role of IST change in this type of production-based asset pricing model? Subsequently, this paper is able to identify the dynamics of different types of investment returns and their association with market returns in a partial equilibrium setting.

This study's approach is based upon the seminal work of Cochrane (1991), who first establishes a relationship between stock and investment returns. Cochrane (1996) uses aggregate investment returns to price the cross section, and Cochrane (1997) uses the investment-return equation to address the equity premium puzzle. The benchmark model differs from Cochrane (1991) in several aspects. Firstly, capital heterogeneity and IST shocks are incorporated to the production-based asset pricing model. Secondly, both the first and second moments of aggregate investment and aggregate stock returns are matched.

Conversely, forecasts of future investment/capital ratios of equipment, structure and GDP growth from aggregate stock and aggregate investment returns appear to be similar to a certain extent. Moreover, the results support Cochrane (1991) results for a larger sample from 1955-2016.

This study follows an alternative production-based perspective first implemented by Cochrane (1991, 1996), who explicitly derives an expression for investment returns. Under constant returns to scale in production, the market return of a firm equals the return of investing a marginal unit into the firm's production technology. The findings of this study highlight the heterogeneous predictability between equipment and structures and the informativeness of investment series in predicting market returns and economic growth.

The rest of the paper proceeds as follows: Section I, provides a literature review. Section II, develops the benchmark production-based asset pricing model. Section III, discuss the data construction and the calibration of the benchmark model to U.S NIPA data. Section IV, tests the benchmark model's empirical predictions. Section V explores the robustness of the results along several dimensions including variations in sample periods, inclusion of additional determinants of stock and aggregate returns, interaction variables, and different parameter values. Section VI concludes the study.

2. Related research

This paper contributes to three distinct strands of finance and macroeconomic literature. The first is to the literature relating asset prices to a firm's investment decision. The second is to the literature on the importance of IST shocks for aggregate investment and economic activity. The third is to the equipment, structure investment and economic growth literature. Cochrane (1991) conducted an excellent analysis of the relationship between aggregate investment and stock returns and its ability to subsequently forecast economic growth. This study introduces two types of capital and investment specific technology shocks to derive a new model for aggregate investment, equipment and structure returns. Subsequently, model implications are empirically tested and utilized to forecast economic growth. Further, the study finds that equipment investment returns has a stronger predictive power relative to structure investment returns when predicting market returns.

IST shocks capture the idea that technical change is embodied in new equipment. Numerous economists including Solow (1960), have proposed embodied technical changes as shocks. Cummins and Violante (2002) documented instances of IST change in numerous industries. Several studies have shown that IST shocks can account for a majority of the variability of output and employment, both in the long run and at business cycle frequencies and associations of investment returns with stock returns (see, for example Greenwood, Hercowitz, and Krusell (1997, 2000), Christiano and Fisher (2003), Fisher (2006), Kuehn (2009), Justiniano, Primiceri, and Tambalotti (2008), Justiniano, Primiceri, and Tambalotti (2010), Chen (2017)). Papanikolaou (2011) considers a general equilibrium model with a representative agent, and finds that IST shocks are positively correlated with the stochastic discount factor implying a negative price of risk for IST shocks. Kogan, Papanikolaou, and Stoffman (2012) extend the model to allow for limited risk sharing, in which case the premium can be negative irrespective of whether households have preference for early or late resolution of uncertainty.

Moving on to the literature on equipment and structure investments, manufacturing accounts for ninety five percent of private sector research and development in U.S., and the equipment sector accounts for more than half of research and development within the manufacturing segment (Summers, 1990). Thus, this study complements the existing literature and offers a potentially fruitful way of improving our understanding of the links between real investments in capital and stock returns.

3. Methodology

This section firstly develops the theoretical benchmark production-based asset pricing model. The next section calibrates the benchmark model parameters to U.S NIPA data. Then finally, the empirical section of the study tests the validity of the theoretical benchmark production-based asset pricing models' implications using univariate and multivariate regressions.

3.1 Theoretical model (Benchmark model derivation)

The production-based asset pricing model developed in this study would be named as the benchmark model. In addition, this study also implements Cochrane's (1991) production-based asset pricing model without incorporating investment specific technology change and capital heterogeneity to explore the model implications for the larger sample from 1955 to 2016.

Model assumptions

According to the producer's first order conditions, the investment return and the mimicking portfolio return should be equal ex post in every state of nature. The key assumption is that managers have access to complete markets. Then, they can trade a portfolio of assets whose payoffs across states of nature at date, t+1 mimic exactly those of the investment returns. The producer's first order conditions imply that the investment return and the mimicking portfolio return should be equal ex post in every state of nature. One can think of returns from investment in capital to reflect the firm's trade-off between the investment's marginal cost and marginal benefit. Similarly, stock returns can be thought of as the consumer's trade off of investing in the capital market.

Linking asset prices and contingent claim prices

This study's bench mark model relates asset prices to contingent claim prices by deriving equations similar to that of Ingersoll (1988), Hansen and Richard (1984) and Cochrane (1991). The model setup is as follows: f^t generates a state tree that incorporates uncertainty. $f^t = \{f^0, f^1, f^2, ... f^{\,t}\}$ is the cumulative history of shocks at date t. $S(f^t)$ is the time 0 price to a claim to a unit of a single consumption good $c(f^t)$ delivered at date t in state f^t. An asset is a claim to a contingent stream of dividends $\{d(f^1), d(f^2), ...\}$.
Assumption 1: Asset 0 or consumption good is a numeraire so that $c(f^0) > 0$ and $c(f^t) > 0$ almost surely for t>0.
The asset's price at time t in state f^t is

$$S(f^t) = \sum_{s^\tau \text{ that follows } s^t} (S(f^t)/S(f^t))\, d(f^t) \qquad (1)$$

Let $s(f^t) = S(f^{t+1}) / S(f^t)$ denote the one period ahead contingent claims price, i.e. the price at time t in state f^t of a unit delivered in a state f^{t+1} that follows f^t.
Let $R^A(f^{t+1}) = (S^A(f^{t+1}) + d(f^{t+1})) / S^A(f^t)$ denote a one period asset return from f^{t+1} that follows f^t. Then equation (1) implies

$$1 = \sum_{f^{t+1}} s(f^{t+1})\, RA(f^{t+1}) \qquad (2)$$

production based model's first order conditions

In the benchmark model capital is divided into two components, namely: structure $k_{s,t}$ and equipment $k_{e,t}$. Furthermore, investment specific technology change is incorporated using 'z' (is a measure of neutral productivity) and 'm' (represents the current state of the technology for producing equipment).
Maximization Problem:

$$\text{Max} \sum S(f^t)(c(f^t) - w(f^t)l(f^t)) \qquad (3)$$

{all states}

The constraints are: Production: $y_t = zh(k_{e,t}, k_{s,t}, l_t)$ (4)

Resources: $y_t = c_t + I_{e,t} + I_{s,t}$ (5)

Capital Accumulation: $k_{e,t} = g(k_{e,t}, mI_{e,t})$ (6-A)

$k_{s,t} = g(k_{s,t}, I_{s,t})$ (6-B)

The framework for capital accumulation is different for equipment.

The most important aspect of the above equation is the inclusion of the factor 'm' that represents the current state of the technology for producing equipment. It determines the amount of equipment that can be purchased for one unit of output. Changes in 'm' formalize the notion of investment-specific technological change. Observe that investment-specific technological change is assumed to affect equipment only. The variable 'z' is a measure of total factor, or neutral productivity[3]. Note that investment-specific technological change requires investment in order to affect output, whereas neutral technological (characterized by 'z' in the model) change does not have this requirement.

First order equations

From the First Order Conditions of the lagrangian the following equations are derived

$$1 = \sum_{f^{t+1}} s(f^{t+1})(z\partial h/\partial k_{e,t+1} + (\partial g/\partial k_{e,t+1}/\partial g/\partial I_{e,t+1}))\partial g/\partial I_{e,t} \quad (7)$$

$$R_{I,e} = (z\partial h/\partial k_{e,t+1} + (\partial g/\partial k_{e,t+1}/\partial g/\partial I_{e,t+1}))\partial g/\partial I_{e,t} \quad (8\text{-A})$$

Similarly

$$R_{I,s} = (z\partial h/\partial k_{s,t+1} + \partial g/\partial k_{s,t+1}/\partial g/\partial I_{s,t+1})\partial g/\partial I_{s,t} \quad (8\text{-B})$$

Therefore:

$$1 = \sum_{f^{t+1}} s(f^{t+1})R^{I,e} \quad (9)$$

$$1 = \sum_{f^{t+1}} s(f^{t+1})R^{I,s} \quad (10)$$

IST change and investment returns

Production: $y_t = mp_{e,t}\, k_{e,t} + mp_{s,t}\, k_{s,t} + mpl_t l_t$ (11)

Resources: $y_t = c_t + I_{e,t} + I_{s,t}$ (12)

Capital Accumulation:

$$k_{e,t+1} = (1 - \delta_e)[k_{e,t} + (1 - (\alpha/2)(m_t I_{e,t}/k_{e,t})^2)m_t I_{e,t}] \quad (13)$$

Therefore, the one-period investment return is, from its definition equation (8-A):

$$R_{I,e} = (mp_{e,t+1} + ((1 + \alpha_e(m_t I_{e\ t+1}/k_{e,t+1})^3)/(1 - (3/2)\alpha_e(m_t I_{e,t+1}/k_{e,t+1})^2)))\ (1 - \delta_e)(1 - (3/2)\alpha_e(m_t I_{e,t+1}/k_{e,t+1})^2) \quad (14)$$

However (no 'm' involved for structure)

[3]'m' can be interpreted as the following: 1/m could be thought of as representing the relative price of equipment goods. This series gradually decreases over time. This particular type of technological change is specific to the production of investment goods, which is why the term investment-specific is chosen. Technological change makes new equipment either less expensive or better than old equipment, allowing for increased consumption.

$k_{s,t+1} = (1 - \delta_s)[k_{s,t} + (1 - (\alpha_s /2)(I_{s,t}/k_{s,t})^2)I_{s,t}]$ (15)

Therefore
$R_{I,s} = (mp_{s,t+1} + ((1+\alpha_s(I_{s,t+1}/k_{s,t+1})^3)/(1 - (3/2)\alpha_s(I_{s,t+1}/ k_{s,t+1})^2)))\ (1 - \delta_s)(1 - (3/2)\alpha_s(I_{s,t+1}/k_{s,t+1})^2)$ (16)
Then, total return are defined as follows:
$R^I = (S_t^{ke,t}k_{e,t+1}/k_{t+1})R^{I,e} + (S_t^{ks,t}\, k_{s,t+1}/ k_{t+1})R^{I,s}$ (17)
Where $k_{t+1} = S_t^{ke,t}k_{e,t+1} + S_t^{ks,t}k_{s,t+1}$ (18)
$S_t^{ke,t}$ and $S_t^{ks,t}$ are derived in the later sections. In equilibrium, the mimicking portfolio return is the return to owning a unit of capital, which can be identified with the stock return. Thus, the price at time t of a claim to a unit of time t+1 installed capital must be:
$S_t^{ke,t+1} = 1/\partial g/\partial I_{e,t} = 1/((1- \delta_e)[1- (3\alpha_e/2)(m_t I_{e,t} /k_{e,t})^2])$ (19-A)
and
$S_t^{ks,t+1} = 1/\partial g/\partial I_{s,t} = 1/((1 - \delta_s)[1 - (3\alpha_s/2)(I_{s,t}/k_{s,t})^2])$ (19-B)
Thus, the return from buying capital and holding it for a period is:
$R^{I,e} = (z\partial h/\partial k_{e,t+1} + (\partial g/k_{e,t+1})S_{t+1}^{ke,t+2)/}S_t^{ke,t+1}$ (20)
Equation (8-A) is derived from the above equation by using equation (19-A).
Similarly, $R^{I,s} = (z\partial h/\partial k_{s,t+1} + (\partial g/\partial k_{s,t+1})S_{t+1}^{ks,t+2})/S_t^{ks,t+1}$ (21)
can be derived.
Derive equation (8-B) from the above equation by using equation (19-B).

4. Data

Considerable care should be taken when matching the theoretical constructs of the model with their empirical counterparts in the U.S. data. NIPA quarterly and annual data are used for the Investment series. Stock returns are obtained from CRSP. The Bond data was obtained from St. Louis Federal Bank's website. The sample is from 1955 first quarter to 2009 last quarter since there is much volatility in the investments data from 1947 to 1954. The investment series are gross private domestic investment, structure and equipment, seasonally adjusted, from NIPA tables, deflated by the implicit price deflator also obtained from NIPA tables. Economic activity is measured by Investment and GDP growth where GDP is downloaded from NIPA tables. The implicit price deflator for nondurable and services consumption, which is the weighted average of the personal nondurable consumption implicit price deflator S_t^{CN} and personal services consumption implicit deflator S_t^{CS}, are taken from NIPA tables. The stock return and dividend price ratio series are derived from the CRSP value-weighted NYSE portfolio (VWRET and VWRETX). The treasury bill, government bond, corporate bond data are from the St Louis Federal Bank's website. The sample is 1955:1-2016:4.

4.1 Calibration and parameter estimation

To proceed to the empirical extension of the above theoretical model, values must be assigned to the following parameters: α_e, α_s, mp_e, mp_s, δ_e and δ_s namely the adjustment cost parameters α's, depreciation δ's, and the productivity of capital mp's. These parameters govern the relation between investment returns and investment/capital ratios. Depreciation (δ) and marginal product (mp) together just raise or lower the investment return by a constant and thus determine the mean investment return. The adjustment cost parameter (α) controls the sensitivity of the investment return to investment/capital ratios at t and t -1, and thus it controls the standard deviation of the investment return.

However, the parameters have almost no effect on the correlation of the investment return with investment/capital ratios and with other variables. Given that the parameters control the mean and standard deviation of investment returns but have little impact on its timing or correlation with other variables, the investment returns are selected initially as follows: Set depreciation δ to 0.1; 2) and select the marginal product mp and the adjustment cost parameter (α) to equate mean and standard deviation of investment and stock returns. For the benchmark model the resulting initial parameters are: annual returns: $\delta_e = 0.4$, $\alpha_e = 0.5$, $mp_e = 0.297$ and $\delta_s = 0.10$, $\alpha_s = 0.5$, $mp_s = 0.14$. For Cochrane's (1991) model the resulting parameters are: annual returns: $\delta = 0.091$, $\alpha = 0.77$, $mp = 0.14$.

5. Empirical findings

Empirical results of the benchmark model are discussed in this section. The relationships between aggregate investments, equipment and structure investments and stock returns are analysed. In addition, the study identified the relationship between different investment capital ratios and stock returns. Furthermore, the relationship between economic activity and aggregate investment returns is explored. Moreover, stock and aggregate investment returns are predicted.

5.1 Descriptive statistics

Table 1 presents means, standard deviations, and autocorrelations of investment/capital ratios, aggregate investment returns for equipment and structure from the benchmark model and aggregate investment returns of gross private domestic investment from Cochrane (1991)'s model, and value-weighted stock returns for annual data. While Table II shows the descriptive statistics for quarterly data.

Table 1: Means, standard deviations, and autocorrelations of investment/capital ratios, investment returns, and stock returns.

			Cochrane (1991) Model	Benchmark Model	Benchmark Model	Benchmark Model
Annual Data	**Lags**	**Stock Return**	**Aggregate Investment Return**	**Aggregate Investment Return**	**Equipment I/K Ratio**	**Structure I/K Ratio**
Mean		0.994	0.994	0.994	0.647	0.055
Standard Deviation		0.103	0.103	0.103	0.322	0.022
Autocorrelations	1	0.150	-0.547	-0.220	0.486	0.927
	2	-0.364	0.057	-0.058	-0.266	-0.043
	3	0.327	0.115	-0.012	0.065	0.141
	4	0.347	-0.128	0.000	-0.099	-0.053
	5	0.245	0.161	0.001	0.029	0.001
	6	-0.322	0.169	0.004	-0.016	0.020
	7	0.031	0.036	0.003	-0.043	-0.056
	8	-0.055	-0.044	0.004	-0.055	0.067
	9	-0.028	0.043	0.003	-0.127	-0.031
	10	0.337	-0.072	0.002	-0.102	-0.074
	11	0.024	-0.047	0.001	-0.093	0.027
	12	-0.225	0.013	0.002	0.030	0.040

Note: Data sample period, 1955-2016 for Annual Data. All returns are in percentages. Autocorrelations are calculated from single regression slope coefficients. Stock returns are the CRSP value weighted NYSE portfolio deflated by the implicit price deflator; the investment return is constructed from equation (17) and for the benchmark model is the weighted average of the investment returns from the two types of capital (equipment and structure);

Table 2: Means, standard deviations, and autocorrelations of investment/capital ratios, investment returns, and stock returns

		Cochrane (1991) Model	Benchmark Model	Benchmark Model	Benchmark Model
Lags	Stock Return	Aggregate Investment Return	Aggregate Investment Return	Equipment I/K Ratio	Structure I/K Ratio
	1.004	1.004	1.004	0.111	0.115
	0.074	0.074	0.074	0.010	0.020
1	0.042	-0.395	0.048	0.600	0.740
2	-0.024	0.005	0.023	-0.208	-0.175
3	-0.072	0.016	-0.039	-0.009	0.061
4	0.050	-0.139	-0.015	0.068	-0.075
5	-0.020	0.092	-0.024	0.044	0.034
6	0.016	0.044	-0.012	0.027	0.086
7	-0.046	-0.023	-0.010	0.015	0.044
8	0.003	0.018	0.007	-0.060	-0.056
9	-0.003	0.059	-0.012	-0.042	-0.184
10	0.014	-0.061	-0.022	0.019	0.064
11	-0.025	-0.047	-0.014	-0.015	0.050
12	0.020	-0.006	-0.021	-0.059	-0.056

Note: Data sample period, 1955:1-2016:4 for Quarterly Data. All returns are in percentages. Autocorrelations are calculated from single regression slope coefficients. Stock returns are the CRSP value weighted NYSE portfolio deflated by the implicit price deflator; the investment return is constructed from equation (17) and for the benchmark model is the weighted average of the investment returns from the two types of capital (equipment and structure);

According to Table 1 and Table 2 it is evident that the Investment/capital ratios are auto-correlated to a certain extent. The mean of the annual and quarterly observations for Investment from the bench mark model and Stock returns is 0.994% and 1.004% respectively. The mean from the benchmark model and stock returns is the same as the parameters are calculated such that they would be the same. The weighted average investment return from the benchmark model and stock returns have the same standard deviations of 0.042 and 0.103 by construction for quarterly data and annual data respectively. Therefore, this study is successful in not only matching the first moment of aggregate investment and stock returns but also the second moments of the same series.

When considering the individual investment returns from the two types of capital, investment returns from structure has a higher mean and standard deviation when compared to investment returns from equipment as expected.

However, the risk return trade-off for structure investment return is 0.002 and 0.004 for annual and quarterly data. For equipment investment return the risk return trade-off is 0.094 and 0.004 for annual and quarterly data. Therefore, structure investment provides you with a better return for risk on an annual and a quarterly basis. The mean for quarterly and annual Equipment to Capital ratio is 0.11 and 0.64 respectively. In addition, the mean for quarterly and annual structure to capital ratio is 0.115 and 0.055 respectively.

Relationship between different types of investment and stock returns

This section analyses the relationship between stock returns and aggregate investment returns, equipment and structure investment returns.

Table 3: Regression of real stock returns on different types of investment returns, investment growth and GDP growth

	Quarterly Data		Annual Data		Quarter by Quarter	
stock return (t-1)	**=**	**alpha+**	**beta* R.H.V (t-1)**	**+ e**		
Right Hand Variable (R.H.V)	**coefficient estimate**	**correlation of stock, R.H.V**	**Coefficient Estimate**	**correlation of stock, R.H.V**		**Coefficient Estimate**
Equipment Investment Returns	-0.4152	-0.419	-0.176	-0.659	1	0.904
	(-2.995)		(-1.972)			(3.968)
Structure Investment Returns	0.168	0.62	0.3064	0.72	2	0.099
	(2.007)		(1.970)			(1.881)
Equipment Investment Returns Growth	0.8536	0.035	0.007	0.165	3	0.948
	(2.125)		(2.449)			(1.522)
Structure Investment Returns Growth	0.017	0.002	0.6045	0.12	4	0.055
	(2.136)		(1.988)			(2.543)
# of obs	248		62			
Adj R square	0.87		0.85			

Note: This table documents the correlation between stock returns and different types of investment returns for equipment and structure. Equipment Returns is the investment return for equipment calculated as in equation (14) and Structure Returns is the investment return for structures calculated as equation (16) from the benchmark model. The data sample is 1955:1-2016:4. These standard errors are corrected for heteroscedasticity and serial correlation. Coefficients with 5% significant level are highlighted

Table 3 implements the following regressions for quarterly and annual data sets:

$$Stock\ Return_t = a + b_0 Equipment\ Investment\ Returns_t + b_1 Structure\ Investment\ Returns_t + b_2 Equipment\ Investment\ Growth_t + b_3 Structure\ Investment\ Growth_t + e \quad (22)$$

Equipment Investment Returns is the investment return for equipment calculated as in equation (14) and Structure Investment Returns is the investment return for structures calculated as equation (16) both derived in the benchmark model.

The main idea behind conducting this particular regression is to check whether equipment and structure investment returns calculated from the benchmark model can predict stock returns. According to Table 3, both equipment and structure investment returns are able to predict stock returns. However, equipment investment returns have a negative correlation with stock returns when compared to structure investment returns. Therefore, equipment investment returns particularly cannot be considered as a good hedge for stock market returns. However, interestingly enough growth of structure investment returns is positively related to stock market returns. The correlation between equipment and structure investment return is 0.22 and 0.43 for quarterly and annual data respectively. While the correlation between equipment investment return and stock return is -0.41 and -0.65 for quarterly and annual data. And the correlation between structure investment return and stock returns is 0.62 and 0.72 for quarterly and annual data. These results can be justified as follows: Structure investment returns are mainly consistent of non-residential investments pertaining to new construction, improvements to existing structures, broker's commissions on sales of structures etc. and therefore would actually be positively correlated with stock market returns. When stock markets are rallying or bullish the investments into structures would be higher. Moreover, the correlation between stock market returns and the growth of structure investment is positive and the coefficient in the above regression for structure investment growth has a positive sign.

On the other hand, investment on property plant and equipment should not be similarly influenced by stock market returns and therefore the results pertaining to equipment investment returns are as expected. In sum, it can be deduced that equipment investment can be thought of as a good hedge against stock markets as it tends to move in the opposite direction to stock returns.

The simultaneous movement of structure and equipment investment returns shows the informativeness of both when predicting stock return fluctuations and economic growth. Structures capital tends to be more elastic, especially in the short run by absorbing productivity shocks which is previously loaded to equipment investment before. Figure 1 presents a plot of annual observations of aggregate stock returns and the annual aggregate investment returns calculated from the benchmark model. According to figure 1 the aggregate stock and investment returns are positively correlated. Plot of the quarterly observations of stock and investment returns show their similarity to Figure 1, again depicting the positive correlation.

Table 4 presents regressions and correlations designed to assess the statistical significance of the correlation between the aggregate investment return and stock returns apparent in Figure 1. In Table 4 implements the following regressions for both annual and quarterly data:

$$Stock\ Return_t = \\ a + b_0 Investment\ Returns_{t-1} + b_1 Investment\ Growth_{t-1} + \\ b_2\ Equipment\ Investment\ Returns_{t-1} + \\ b_3 Structure\ Investment\ Returns_{t-1} + e \quad (23)$$

Single equation regressions are implemented using the same right hand side variables and the results are quite similar to that of the multiple regression results. The main idea behind these regressions is firstly to identify when companies change their investment returns and investment growth dynamics how does this affect the stock returns?

As apparent from Table 4, all four variables are able to predict stock returns and this is further supported by their respective correlations with stock returns as well. Secondly, this table provides evidence of the correlation between aggregate investment and stock returns. The correlation coefficient between stock and aggregate investment returns ranges from 0.338 for quarterly returns to 0.401 for annual investment returns. Table 4 also includes the correlation of stock returns with aggregate investment growth. For quarterly data there is a correlation of 0.38 and 0.31 for aggregate investment growth and stock returns for quarterly and annual data respectively. In addition, all correlation values are significant. Thus, the correlation between the stock returns and investment returns visible in Figure 1 is not a sensitive result specific to the particular model used.

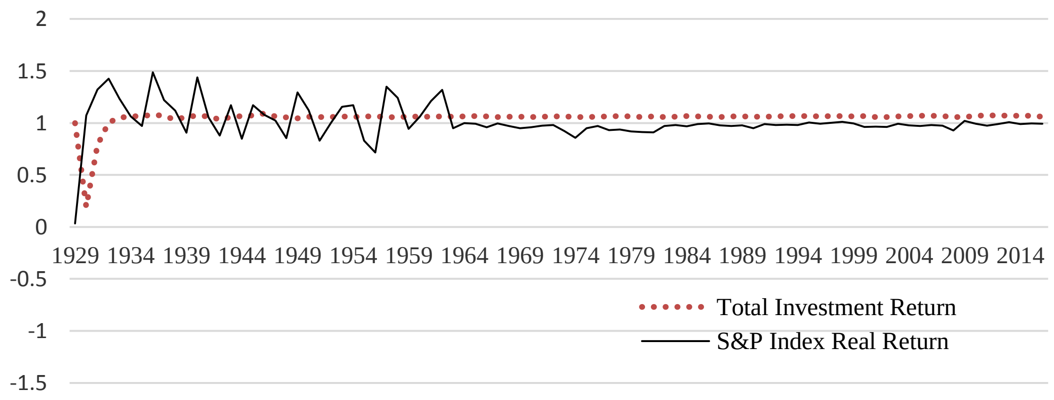

Figure 1: Annual observations of real returns on the value weighted NYSE portfolio, and annual investment returns in percentages

Table 4: Regression of real stock returns on investment returns, investment growth and GDP growth

	Quarterly Data	Annual Data			Quarter by Quarter	
stock return (t-1)	**=**	**alpha+**	**beta* R.H.V (t-1)**	**+ e**		
Right Hand Variable (R.H.V)	**coefficient estimate**	**correlation of stock, R.H.V**	**coefficient estimate**	**correlation of stock, R.H.V**		**coefficient estimate**
Aggregate Investment Returns	0.055	0.338	0.016	0.401	1	0.904
	(2.543)		(2.290)			(3.968)
Aggregate Investment Returns Growth	0.003	0.381	0.058	0.311	2	0.099
	(0.345)		(2.262)			(1.881)
Equipment Investment Returns	-7.159	-0.419	-0.000	-0.659	3	0.948
	(-2.265)		(-2.875)			(1.522)
Structure Investment Returns	0.016	0.102	0.984	0.429	4	0.055
	(2.666)		(2.410)			(2.543)
# of obs	248		62			
Adj R square	0.86		0.85			

Note: This table documents that the correlation between stock returns and aggregate investment returns from the benchmark model (which is a weighted average of the investment returns from the two types of capital equipment and structure) visible in Figure 1 is statistically significant. Investment Growth is the growth of the aggregate investment return from the benchmark model. The data sample is 1955:1-2016:4. These standard errors are corrected for heteroscedasticity and serial correlation. Coefficients with 5% significant level are highlighted.

5.2 IST shocks and business fluctuations

This study provides empirical support to the idea of investment specific technology shocks being a main driver behind business fluctuations. Variance decomposition shows that investment shocks account for around 65% of the fluctuations in the equipment investment returns and around 30% of the fluctuations in aggregate investment returns. The effect of investment specific technology shocks on structure investment returns is negligible. These results emphasizing the significance of investment shocks are consistent with prior literature of Fisher (2006) and broadly in line with Greenwood, Hercowitz, and Krusell (2000). Greenwood et al. (1997) finds that approximately 60 percent of post-war productivity growth can be attributed to investment-specific technological. Greenwood et al. (2000) states that on the short run investment specific technological shocks play an important role in the generation of business cycles. Over the long run, the relative price of equipment has declined remarkably while the equipment to GDP ratio has risen in the US.

This suggests that investment-specific technological change may be an important factor in forecasting economic growth. In addition, investment-specific technology shocks may also be a source of economic fluctuations. Justiniano et al. (2008) state that investment specific technology shocks are the most important driver of business cycle fluctuations in US output and hours. Cochrane (1996) finds that investment returns are significantly priced. Cochrane (2005) argues for the production-based approach, stating that it would allow us to link stock returns to genuine business cycle variables.

5.3 Forecasts of investment and stock returns

Table 5 conducts a comparison of forecasts of investment returns between forecasts of stock returns. The main idea behind the following regressions is to identify whether stock returns and investment returns can be predicted by the same set of variables and whether they are all predicting the same component in both stock and aggregate investment returns. Forecasted stock returns and forecasted investment returns are plotted in Figure 1. The following regressions are implemented for quarterly and annual data sets:

$$\begin{aligned} Stock\ Return_t &= a + b_0 Term_{t-1} + b_1 Corp_{t-1} + b_2 LagRet_{t-1} + b_3 DP_{t-1} \\ &\quad + b_4 IK\_ERATIO_{t-1} + b_5 IK\_SRATIO_{t-1} + e \end{aligned} \tag{24}$$

$$\begin{aligned} Investment\ Return_t &= a + b_0 Term_{t-1} + b_1 Corp_{t-1} + b_2 LagRet_{t-1} + b_3 DP_{t-1} \\ &\quad + b_4 IK\_ERATIO_{t-1} + b_5 IK\_SRATIO_{t-1} + e \end{aligned} \tag{25}$$

$$\begin{aligned} Stock\ Return_t - Investment\ Return_t &= a + b_0 Term_{t-1} + b_1 Corp_{t-1} + b_2 LagRet_{t-1} + b_3 DP_{t-1} \\ &\quad + b_4 IK\_ERATIO_{t-1} + b_5 IK\_SRATIO_{t-1} + e \end{aligned} \tag{26}$$

The forecasting variables are the term premium (Term), the corporate premium (Corp), the lagged real stock return (Lag Ret), the dividend to price ratio (DP), and the investment/capital ratios for equipment and structures (IK_ERATIO and IK_SRATIO). The third regression involves taking the difference between Investment and Stock returns (Stock-Inv) and ideally the coefficients from this particular regression should be insignificant as the variables would be predicting the same component in both Stock and Investment returns. Investment/capital ratio for both equipment and structures are included as an independent variable because the investment return model strongly links returns to contemporaneous investment/capital ratios. Moreover, since investment/capital ratios are serially correlated, this suggests that the investment/capital ratio should also forecast returns.

There is no endogeneity issue in this case as by construction of investment returns in both the benchmark model and Cochrane (1991) model. All regressions are also implemented in this study for Cochrane (1991) model. However, those tables are omitted for brevity.

The variables used in this study are only a selected few that are known to forecast stock returns and were chosen mainly because of their link with economic activity and also because they were used in papers in similar nature to that of this study (refer Cochrane 1991).

Table 5-A presents single regressions of quarterly and annual returns on the forecasting variables. The coefficients for all forecasting variables for stock returns are significant at conventional levels. The coefficients for all forecasting variables except corporate premium are significant for predicting aggregate investment return and are also of the same sign and roughly around the same magnitude as the coefficients of the stock return regressions. The difference between the stock return and the investment return is regressed on the forecasting variables, in order to test whether the coefficients are in fact equal in the column marked "Stock-Inv." As depicted in this table, the hypothesis that the single regression coefficients are equal for all the forecasting variables can be accepted. Table 5-B shows multiple regression forecasts of stock and investment returns using all the forecasting variables mentioned earlier together. For both stock and investment returns for quarterly and annual data the term premium and corporate premium coefficients are significant.

Now these results are compared with the coefficients and t statistics of the “Stock-Inv” dependant variable. All forecasting variables are individually and jointly insignificant and are unable to predict the return difference. Therefore, these results are consistent with the original hypothesis and therefore, it cannot be rejected the fact that the stock and investment return forecasts based on all variables are the same.

Figure 1 plot these forecasts of annual real investment and stock returns and confirms their correlation. In sum, the results of Table 5-A and Table 5-B suggest that all variables seem to have a common "business cycle" component that forecasts both stock and investment returns equally. The fact that each of the variables is significant in single regressions, and jointly significant in multiple regressions, suggests that all these variables seem to be forecasting the same component of stock returns. Since these variables do not forecast the difference between stock and investment returns, individually or jointly, it can be deduced that the forecastable component is the same in stock and investment returns.

Table 5-A: Forecasts of stock returns and investment returns

Single Reg. Return Forecasting Variable	Quarterly (t-1) stock return coeff. est.	Data = Aggregate Investment Return coeff. est.	alpha+ Stock-Inv coeff. est.	Annual beta* stock return coeff. est.	Data X(t-2)+ Aggregate Investment Return coeff. est.	E Stock-Inv coeff. est.
Term	0.048	0.007	-0.055	0.202	0.425	-0.627
	(0.583)	(0.321)	(-0.625)	(1.628)	(1.095)	(-1.535)
Corp	0.064	0.001	-0.063	0.111	0.351	-0.462
	(6.353)	(0.228)	(-0.005)	(1.336)	(0.869)	(-1.125)
Lag ret	0.042	0.046	0.004	0.150	-0.006	0.155
	(1.320)	(8.424)	(0.123)	(1.021)	(-0.124)	(1.132)
DP	0.271	-0.036	0.307	0.480	0.776	0.296
	(0.661)	(-0.592)	(0.791)	(5.635)	(1.005)	(0.371)
Equipment I/K	-0.733	-0.518	1.251	-0.052	-0.694	0.746
	(-2.128)	(-2.055)	(0.994)	(-2.606)	(-2.445)	(1.617)
Structure I/K	0.467	0.955	0.488	0.740	5.057	0.317
	(0.604)	(2.044)	(0.496)	(1.223)	(2.052)	(0.868)
Adj R Square	0.67	0.66	0.11	0.65	0.65	0.10
# of obs	248	248	248	62	62	62

Note: The forecasting variables are as follows: Term is the 10-year government bond rate minus the treasury bill rate. Corp is the corporate bond rate minus the treasury bill rate. Lagged Ret is the lagged real value weighted return, DP is the dividend-price ratio. IK_ERATIO is the investment/capital ratio for equipment and IK_SRATIO is the investment/capital ratio for Structures. The data sample is 1955:1-2016:4. Stock-Inv is the dependant variable created by taking the contemporary difference between Stock and Investment return. The standard errors are corrected for heteroscedasticity and serial correlation. Coefficients with 5% significant level are highlighted

Table 5-B: Forecasts of stock returns and investment returns

Multiple Reg. Return Forecasting Variable	Quarterly (t-1) stock return coeff. est.	Data = Investment Return coeff. est.	alpha+ Stock-Inv coeff. est.	Annual beta* stock return coeff. est.	Data X(t-2)+ Investment Return coeff. est.	E Stock-Inv coeff. est.
Term	0.540	0.029	-0.569	0.238	-0.152	-0.390
	(2.229)	(0.544)	(-1.258)	(1.718)	(-1.272)	(-1.287)
Corp	0.156	0.001	-0.156	0.036	-0.009	-0.045
	(2.556)	(0.053)	(-1.484)	(0.290)	(-0.082)	(-0.292)
Lag ret	0.009	0.005	0.014	0.111	0.015	0.097
	(0.131)	(0.160)	(0.238)	(0.870)	(0.230)	(0.779)
DP	0.314	-0.089	0.403	-0.482	-0.015	0.467
	(0.842)	(-1.201)	(1.060)	(-6.178)	(-0.356)	(1.065)
Equipment I/K	-1.411	-0.516	-0.895	-0.054	-0.147	-0.092
	(-2.350)	(-2.548)	(-1.256)	(-2.499)	(-2.016)	(-0.731)
Structure I/K	0.734	1.207	0.473	0.561	0.734	1.295
	(1.664)	(2.960)	(0.594)	(1.211)	(2.704)	(1.266)
Adj R Square	0.61	0.60	0.11	0.62	0.60	0.12
# of obs	248	248	248	62	62	62

Note: The forecasting variables are as follows: Term is the 10-year government bond rate less treasury bill rate. Corp is the corporate bond rate less the treasury bill rate. Lagged Ret is the lagged real value weighted return, d/ p is the dividend-price ratio. IK_ERATIO is the investment/capital ratio for equipment and IK_SRATIO is the investment/capital ratio for Structures. The data sample is 1955:1-2016:4. Stock-Inv is the dependant variable created by taking the contemporary difference between Stock and Investment return. The standard errors are corrected for heteroscedasticity and serial correlation. This table contains the multiple regressions. Coefficients with 5% significant level are highlighted.

Table 6 given below conducts a comparison of forecasts of equipment and structure investment returns between forecasts of stock returns. The main idea behind the following regressions is again to identify whether stock returns and the different types of investment returns from equipment and structure can be predicted by the same set of variables and whether they are all predicting the same component in both stock and investment returns. The following regressions[4] are implemented for quarterly and annual data sets:

$$Equipment\ Investment\ Return_t = a + b_0 Term_{t-1} + b_1 Corp_{t-1} + b_2 LagRet_{t-1} + b_3 DP_{t-1} + b_4 IK\_ERATIO_{t-1} + b_5 IK\_SRATIO_{t-1} + e \quad (27)$$

$$Structure\ Investment\ Return_t = a + b_0 Term_{t-1} + b_1 Corp_{t-1} + b_2 LagRet_{t-1} + b_3 DP_{t-1} + b_4 IK\_ERATIO_{t-1} + b_5 IK\_SRATIO_{t-1} + e \quad (28)$$

[4] As a robustness test, we add GDP growth to the above regression in Table 6 as an additional forecasting variable and this variable also turns out to be positive and highly significant in all regressions.

Table 6: Forecasts of stock returns and equipment and structure investment returns

Multiple Reg. Return Forecasting Variable	Quarterly (t-1) Equipment Investment return coeff. est.	Data = Structure Investment Return coeff. est.	Annual beta* Equipment Investment return coeff. est.	Data X(t-2)+ Structure Investment Return coeff. est.
Term	0.006	0.044	0.211	0.001
	(0.702)	(0.598)	(1.330)	(0.442)
Corp	0.003	0.005	0.263	0.000
	(1.647)	(0.301)	(2.344)	(0.025)
Lag return	0.618	-0.158	0.016	-0.162
	(2.903)	(-1.640)	(1.529)	(-2.917)
DP	0.020	-0.130	0.053	-0.002
	(1.010)	(-1.419)	(0.668)	(-1.181)
Equipment I/K	-0.004	0.752	-0.466	0.002
	(-0.204)	(1.579)	(-11.067)	(4.820)
Structure I/K	0.021	1.898	1.434	0.028
	(0.860)	(2.144)	(2.485)	(4.604)
Adj R Square	0.65	0.65	0.63	0.63
# of obs	248	248	62	62

Note: The forecasting variables are as follows: Term is the 10-year government bond rate less treasury bill rate. Corp is the corporate bond rate less the treasury bill rate. Lagged Ret is the lagged real value weighted return, d/ p is the dividend-price ratio. IK_ERATIO is the investment/capital ratio for equipment and IK_SRATIO is the investment/capital ratio for Structures. The data sample is 1955:1-2016:4. The standard errors are corrected for heteroscedasticity and serial correlation. This table contains the multiple regressions. Coefficients with 5% significant level are highlighted.

Table 6 presents multiple regressions of quarterly and annual returns on equipment and structure investment returns. The coefficients for all forecasting variables for stock returns are significant at conventional levels. The coefficients for all forecasting variables except the dividend premium are significant for predicting investment and stock returns. In sum, the results of Table 6 suggest that all variables seem to have a common "business cycle" component that forecasts both stock and investment returns equally.

Forecasts of GDP Growth from Investment Returns and Stock Returns

Table 7 concentrates on the ability of linking the different types of investment returns from equipment and structures with economic activity. The following regressions are implemented for annual and quarterly data:

$$GDP\ Growth_t = a + \sum \begin{matrix} b_i Equipment\ Investment\ Return_i + e; \\ i = t, t-1, t-2, t-3, t-4, t+1, t+2 \end{matrix} \quad (29)$$

$$GDP\ Growth_t = a + \sum \begin{matrix} b_i Structure\ Investment\ Return_i + e; \\ i = t, t-1, t-2, t-3, t-4, t+1, t+2 \end{matrix} \quad (30)$$

Both Equipment and Structure Investment returns significantly and positively affect GDP growth for both annual and quarterly data. However, investment from structure seems to be the main driver behind economic growth although investment from equipment also contributes to a great extent.

Table 7: Forecasts of stock returns and different types of investment returns

Multi GDP Growth	Quarterly (t-1)	Data =	Annual alpha+beta *	Data Return+e
	Equipment Return coeff.	**Structure Investment Return coeff.**	**Equipment Return coeff.**	**Structure Investment Return coeff.**
Return Date	est.	est.	est.	est.
T	0.124	0.015	0.152	2.687
	(0.478)	(2.505)	(7.939)	(3.133)
t-1	0.426	0.010	0.070	2.921
	(2.065)	(2.940)	(3.211)	(2.245)
t-2	0.422	0.002	0.039	2.423
	(2.461)	(0.111)	(2.778)	(0.517)
t-3	0.636	0.026	0.020	2.638
	(3.043)	(2.367)	(1.368)	(1.303)
t-4	0.276	-0.015	0.001	-1.337
	(1.010)	(-0.596)	(0.783)	(-1.734)
t+1	0.181	0.007	-0.002	1.526
	(1.144)	(3.254)	(-0.119)	(3.306)
t+2	0.373	0.001	0.017	3.231
	(2.616)	(0.592)	(1.146)	(1.357)
Adj R Square	0.67	0.68	0.65	0.68
#of obs	248	248	62	62

Note: The data sample is from 1955:1-2016:4. Equipment Investment Return is the return for Equipment calculated from the benchmark model as in equation (14) and Structure Investment Return is the return for Structures calculated from the benchmark model as in equation (16). Stock return is NYSE value weighted real stock return. The following tables contain both multiple and single regression results for both annual and quarterly data. The standard errors are corrected for heteroscedasticity and serial correlation. Coefficients with 5% significant level are highlighted.

The following hypothesis is used to explain the relationship between economic growth and investment returns from equipment and structures. Increasing economic growth would raise the rents earned by investments in equipment to establish and entrench market positions. However, it would also raise the rents earned by structures. Ideally located land is in fixed supply and larger structures economize on the use of such land, and so one might argue that faster economic growth would shift the use of savings away from producers' equipment and toward structures. Moreover, there is a trade-off between these two types of rents and since investment in structures affects output over a relatively long period (so new structures do not have much effect); The introduction of new machines will have an almost immediate impact. Hence, as shown by this study's evidence equipment investment can be a main driver of economic growth.

5.4 Robustness tests

Several robustness tests are conducted to see whether this study's benchmark models' results are persistent. Firstly, equally weighted stock returns are used instead of value weighted stock returns and the whole analysis re-conducted and the results still persist in most cases. In furtherance, the value weighted portfolios of NYSE, NASDAQ and AMEX total are utilised as the dependent variable. Out of sample tests are implemented to gauge the model performance by splitting the sample into two sub samples and results still persist in most part. Secondly, the results are robust to changes in model parameters.

6. Conclusion

The analysis in this study was motivated by the following perspectives: To identify the relationship between different types of investment returns from capital, and their relationships with aggregate stock returns. Which type of capital has a higher return? What is the risk return trade off of individual type of investment return? Identify the relationship between different types of investment returns and economic growth. Subsequently, a new production based asset pricing model is developed with capital heterogeneity and investment specific technology change to identify the relation between investment and stock returns. This benchmark partial equilibrium production-based model framework is then calibrated to the U.S. NIPA data.

The main findings of the study can be summarized as follows: The aggregate investment return and equipment investment return developed from the benchmark model in this study has significant power in predicting stock returns and economic growth. Structure investment return is higher than equipment investment returns and also has a higher risk return trade off. Structure and equipment returns are positively and negatively correlated with stock market returns respectively. In fact, structure investment returns have a higher correlation with aggregate stock returns compared to equipment investment returns. Equipment investment returns can significantly forecast economic growth. Moreover, real variables such as term premium, corporate premium, lagged returns, DP and investment/capital ratios appear to forecast aggregate stock and aggregate investment returns as well as equipment and structure investment returns. In addition, investment/capital ratios do seem to forecast aggregate stock and aggregate investment returns.

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An empirical and theoretical view of blockchain enabled corporate governance

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Abstract

There is considerable hype about blockchain in almost every industry including finance and significant investments globally. We explore the cases and implications of blockchain adoption in corporate governance using related theories. This study evaluates blockchain technology, investment in blockchain, applications, and impact on stakeholders at what level, firm or global. Moreover, we compile a unique database of blockchain investments and conduct an empirical analysis of investments in blockchains and related start-ups. Finally, we provide behavioural, ethical and managerial perspectives of blockchain technology adoption in corporate governance.

Keywords: Blockchain; Corporate Governance; Corporate Voting; Disruptive Technology; Smart Contracts; Tokenisation

1. Introduction

Blockchain technology has potential for creating and increasing socio-economic welfare as well as increasing the financial industry's reputation. This study analyses blockchain development, applications and adoption in corporate governance. We review the current use of blockchains in corporate governance and link its implications to traditional theories in corporate governance. Moreover, we provide a behavioural, ethical and managerial perspective on blockchain adoption in corporate governance. This study further details theories and empirical evidence that facilitate better understanding of blockchains' potential and its implications for corporate governance. Especially, as the use of blockchains simultaneously interacts with and challenges firms, stakeholders, and financial markets. In addition, we compile a unique empirical database and conduct an empirical analysis of blockchain and related start-up investments globally and forecast future blockchain investments.

To our knowledge, this is one of the first studies to conduct such work. We pose the following research questions: 1. What are the current examples of blockchain applications in corporate governance? 2. What are the implications of adopting blockchain in corporate governance and how this can be linked to corporate governance theories? 3. What are the behavioural perspectives and

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market dynamics arising from the use of blockchain? 4. What are the links between investments in blockchain internationally and future forecasts? This study contributes and also differs from prior literature by providing a framework of current development and issues, impact on stakeholders, behavioural, ethical perspectives and the future of blockchains with regard to corporate governance. Thus, our study provides insights on the amalgamation of academic research and industry applications. Our study has implications for both industry applications, academic research and should be of interest to market participants, regulators, academics and multi-national corporations. From a social perspective, this study would appeal to governments, law and policy makers, entrepreneurs and investors of blockchains within the financial technology (fintech) community.

This study is organised as follows: Section 2 discusses methodology. Section 3 discusses blockchain technology. Section 4 provides related corporate governance theories. Section 5 provides descriptive empirics and future investment forecasts of blockchain technology investments. Section 6 outlines blockchain adoption in corporate governance. Section 7 discusses governance and ethical aspects of blockchains with regard to corporate governance applications. Finally, section 8 concludes the study.

2. Corporate governance

A structured literature review was undertaken to identify sources of secondary data, the historical context, and best practice comparative information. While we discuss prior research when presenting the research framework, our objective is not to provide an exhaustive review of the research on every aspect of blockchain and corporate governance. This study is focused in the adoption of blockchain technology on corporate governance and thus would only focus on corporate governance theories that can be affected by blockchain adoption. *The agency cost theories* on corporate governance state that the primary goal of good governance in firms is to protect shareholders and other stakeholders from the managerial discretion. The separation between ownership and control, and divergent interests of different stakeholders, make it necessary to adopt governance mechanisms to align stakeholders' interests (Cuervo, 2002).

These mechanisms try to reduce agency costs and guarantee an efficient decision-making process that maximizes the company's wealth (Ahlering & Deakin, 2007). There are multiple corporate governance mechanisms recognized by research, both internal and external (Fama and Jensen (1983); Jensen (1993)). Amongst the internal mechanisms, the most relevant ones seem to be the board of directors, ownership structure, board of directors, and the role of compensation of directors and managers. Moreover, *transaction cost theory*, first initiated in Coase's (1937) paper and later theoretically described by Williamson(1996) is an interdisciplinary alliance of law, economics and organizations. This theory attempts to view the firm as an organization comprising of people with different views and objectives. The underlying assumption of transaction theory is that firms have become so large they in effect substitute for the market in determining the allocation of resources. In other words, the organization and structure of a firm can determine price and production.

Another theory in corporate governance which is the *stewardship theory* has its roots in psychology and sociology and is defined by Davis, Allen & Hayes (1997). According to this theory, stewards are company executives and managers working, protecting and making money for the shareholders. Unlike agency theory, stewardship theory stresses not on the perspective of individualism, but rather on the role of top management as stewards, integrating their goals as part of the organization. The stewardship perspective suggests that stewards are satisfied and motivated when organizational success is attained. In addition, another theory in corporate governance is the *resource dependency theory*. While stakeholder theory focuses on relationships with many groups for individual benefits, resource dependency theory concentrates on the role of board directors in providing access to resources needed by the firm. Hillman &Dalziel (2003) contend that resource dependency theory focuses on the role that directors play in providing or securing essential resources to an organization through their links with the external environment. Finally, *political theory* considers the approach of developing voting support from shareholders, rather by purchasing voting power. Hence having a political influence in corporate governance may direct corporate governance within the organization. Public interest is much reserved as the government participates in corporate decision-making, taking into consideration cultural challenges.

The objective of this study's literature review is not to discuss the entire literature on corporate governance but to identify certain theories that maybe affected by blockchain adoption in the corporate governance sphere.

3. Blockchain technology

Blockchain is just one form of the broader area of distributed ledger technology (DLT). Given the widespread use of the term "blockchain" we use that term instead of DLT. There are two main types of blockchains: public and permissioned. On a public blockchain, such as Bitcoin, no permission needs to be asked to use or view the blockchain. The two highest profile public blockchains are Bitcoin and Ethereum. Bitcoin was the first blockchain (Nakamoto, 2008). Most public blockchains are open source: anyone can take the code and use it to create a competing blockchain. No central authority or person runs a public blockchain, rather a network of peers agrees on the state of the blockchain. Newer platforms such as IOTA, Hashgraph, Holochain and Dfinity do not use a chain of blocks.

If there is no central authority overseeing Bitcoin's blockchain, how is it kept accurate and how are people prevented from making fraudulent transactions? The breakthrough Bitcoin made is that peers conduct verification. Bitcoin's blockchain is a ledger that records how many bitcoins an entity owns in a particular wallet. It also contains a full transaction history of all transactions sent and received by that particular wallet. People or entities are not defined by their names, as they would be for a bank account, rather public keys are used. Public keys are a long string of numbers and letters. The Bitcoin blockchain records what bitcoin each public key owns. Whoever controls a public key can be said to own that bitcoin. A public key, in turn, is controlled by the person who has the private key (another long string of numbers and letters). Whoever has access to the private key is able to send bitcoins, which is why security of private keys is so important. Crucially, unlike with a password for a bank account, there is no ability to recover a private key if a person loses or forgets it.

Miners are incentivized to perform the validation and block creation work, by a block reward: a reward of bitcoin for successfully adding a block to the blockchain, plus the transaction fees from the transactions the miner included in the block. The block reward also serves to distribute newly created bitcoin. Bitcoin is currently capped at 21 million bitcoins and it is expected that in 2140 the last bitcoin will be created. Once that occurs miners will receive only transaction fees that people attach to their transactions. The blocks are cryptographically linked to each other, which results in a ledger that is often said to be immutable. Transactions cannot be altered after the fact, although it is possible in exceptional circumstances to make retrospective changes (DuPont, 2017).

Bitcoin and its proof-of-work consensus system has been criticized for its electricity use, although Vranken (2017) has questioned the estimates. Other blockchains, mindful of electricity usage, use proof-of-stake or delegated proof-of-stake which do not expend large amount of electricity as nodes are chosen at random to validate transactions. Other forms of consensus are used such as proof of importance, which is used in the NEM blockchain. Permissioned blockchains, which are considered next, do not normally use proof-of-work and thus have minimal electricity requirements.

In our opinion permissioned blockchains, as the name suggest, can limit who has permission to validate transactions, view the blockchain and make transactions. Permissioned blockchains are normally run by consortiums. Fewer participants mean that a permissioned blockchain is not as decentralized as a public blockchain, which means that it can be easier to make changes to it. Several public blockchains, such as Ethereum and NEM, also offer permissioned versions.

Smart contracts are a set of instructions residing on a blockchain, written in computer code and are a key aspect of harnessing blockchains' capabilities. Szabo (1994) states that a smart contract can execute the terms of a contract and is a computerized protocol. They can be used, for example, to guarantee payment by counterparties involved in a contract. Ethereum was the first blockchain to successfully employ smart contracts. The self-enforcing nature of smart contracts means that transaction cost of monitoring and enforcing adherence to rules and laws can be removed. Mik (2017) states that smart contracts can be implemented to solve numerous legal and enforcement issues.

In our opinion, applications of smart contracts in corporate finance and governance could include option exercises, other contingent claims requiring instant collateral transfer in case of default. They can also include performance based employee compensation packages. Moreover, smart contracts alleviate agency costs in many of these scenarios in corporate governance. In addition, a firm's willingness to implement smart contracts can signal future ethical behaviour.

4. Methodology

There is limited understanding of blockchain technology-based applications in finance and its regulation and governance. Given this setting, firstly, we compile a unique database of blockchain and related start-up investments globally. Due to blockchain's relative novelty, its exponential development and secrecy by adoptive firms due to future profitability prospects, empirical data with regard to blockchain applications are non-existent or difficult to obtain (refer Dapp, Slomka, & Hoffmann (2014)). Hence, apart from the manually collected investment data on blockchain technology, the authors have drawn on practical problems, scenarios and experiences. The authors achieve this objective via direct involvement in roundtable discussions, think-tanks, governments and engaging directly with industrial applications of blockchain implementations via industry collaborations.

Secondly, we survey prior literature on blockchain and corporate governance, technical reports of blockchain adoption in the corporate governance sphere, media reports to identify the implications of blockchain adoption in corporate governance. Although there is a growing literature on the development of blockchain technology, few studies explore blockchain applications in finance and the legal aspects. Yermack (2017) provides an excellent view of blockchain development and implications on corporate governance. Piazza (2017) discusses the regulatory perspectives on blockchain technology. Our study differs from these papers and prior literature in several aspects. 1. We identify behavioural, ethical and managerial perspectives of blockchain adoption. 2. We provide an empirical analysis of blockchains and related start-up investments globally. 3. We provide implications of blockchain adoption in corporate governance and link them to theories in corporate governance. This study contributes to the behavioural perspectives and structural changes not limited to firms due to technology shocks such as blockchain but to market participants, developers and regulators alike.

5. Empirical analysis

To our knowledge, this is the first study to conduct an empirical analysis of investments in blockchain and related start-ups and it is the first study that forecasts future investment in blockchain. Table 1 shows the interest in blockchain technology by providing venture capital investments in blockchain and related start-ups globally from 2012 to the end of February 2018.

Table 1: Venture investment in blockchain and related start-ups globally

Year	Total invested in USD Million	# of Deals
2012	50	30
2013	100	95
2014	500	240
2015	600	232
2016	570	221
2017	980	295
2018 Feb	390	63

Figure 1 depicts the number of venture rounds completed between 2017 and the end of February 2018 led or participated by key investors in blockchain and innovative technologies. It identifies several key venture capital firms investments in blockchain technologies in financial markets.

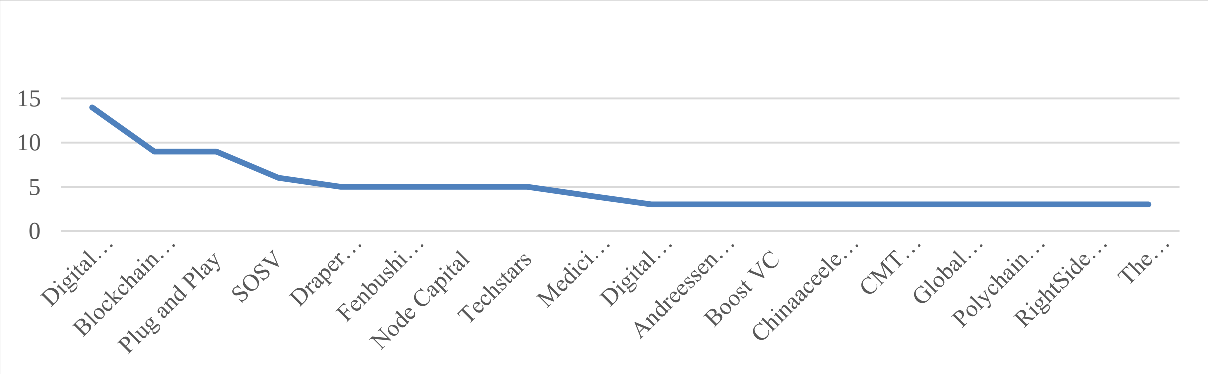

Figure 1: Venture round count completed by key investors of blockchain between 2017 and February end 2018

Figure 2 depicts the percentage of Blockchain and related start-ups by geography between 2017 and the end of February 2018. The U.S is leading investments in blockchain and related start-ups. The majority of the "other" percentage is due to China.

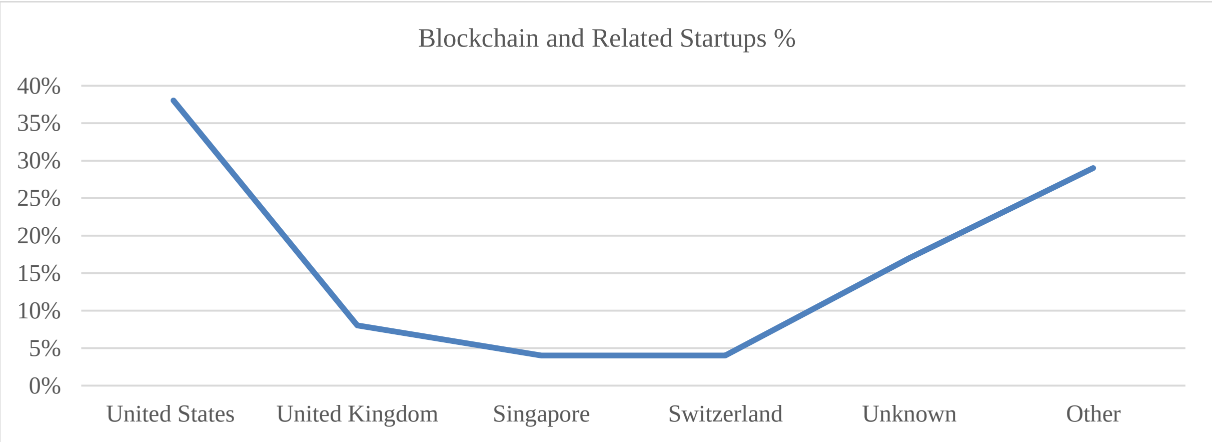

Figure 2: Percentage of Blockchain and related start-ups by geography between 2017 and end of February 2018

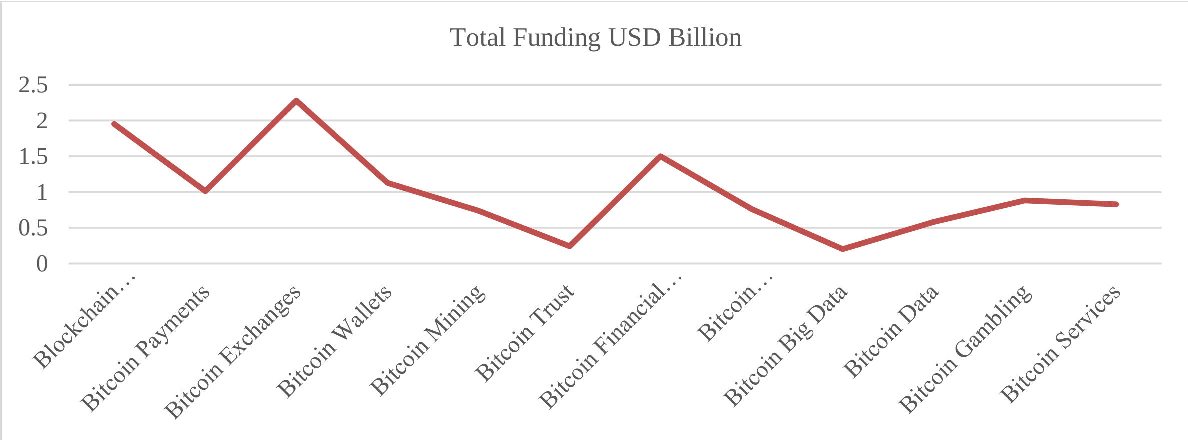

Figure 3: Blockchain Technology investment by different Categories

Figure 3 depicts blockchain technology investment by different categories. According to Figure 3, the majority of blockchain investments are applications related to Bitcoin, with the highest and third highest investments being in Bitcoin exchanges and Bitcoin based financial services. The second highest investment is in innovations in blockchain platforms. It is concerning to observe the low investments in Blockchain big data, where developments would be made in handling the large amount of data maintained on blockchains. Figure 4 depicts the number of investments in each blockchain category. This supports the picture provided in Figure 3 with numerous Bitcoin related applications monopolizing developments with regard to Blockchain technology.

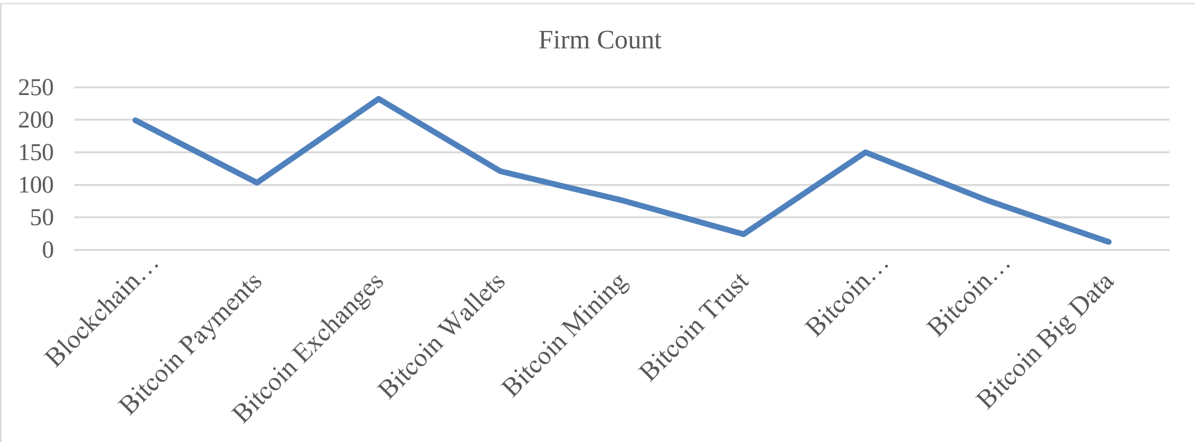

Figure 4: Number of Blockchain Technology deals by different Categories

Table 2 provides the correlation of investments in blockchains between global investments, U.S., Europe, and Asia. There is negative correlation between global blockchain investment and the U.S. and also the U.S. and Asia (largely driven by China). This again shows the divergence of opinion and the trade war centric atmosphere between the U.S and China. There is strong correlation between global blockchain investments and Asia and Europe showing a co-movement of optimistic sentiment in blockchains in these geographic areas.

Table 2: Correlation of investments in Fintech between global investment, U.S, Europe and Asia

Region	Correlation
Global and US	-0.23
Global and Europe	0.90
Global and Asia	0.99
US and Europe	0.22
US and Asia	-0.37
Europe and Asia	0.82

We use average linear interpolation to forecast future investments and blockchain deal counts globally. Figure 5 and 6 both exhibit a growing linear trend for investments and deal count in 2019 and 2020 reaching to 3.46 and 4.09 USD billion and 389 and 434 respectively. Figure 5 shows a dramatic increase in investment in blockchains by venture capital firms in 2018, increasing by 280%.

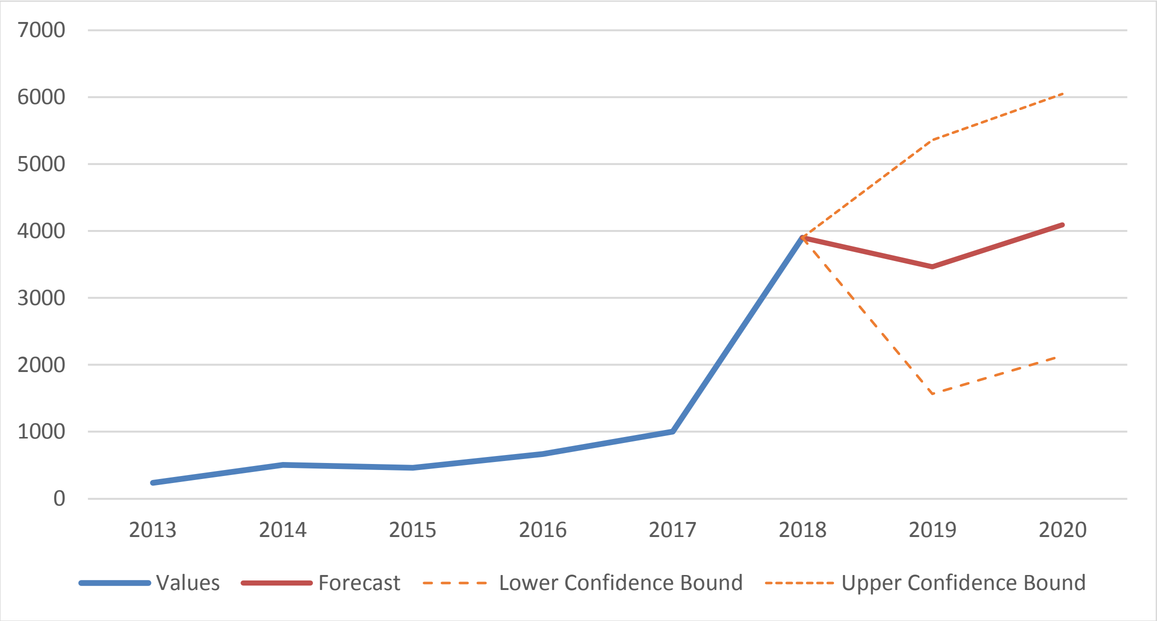

Figure 5: Venture capital investments in Blockchain technology and future investment forecasts

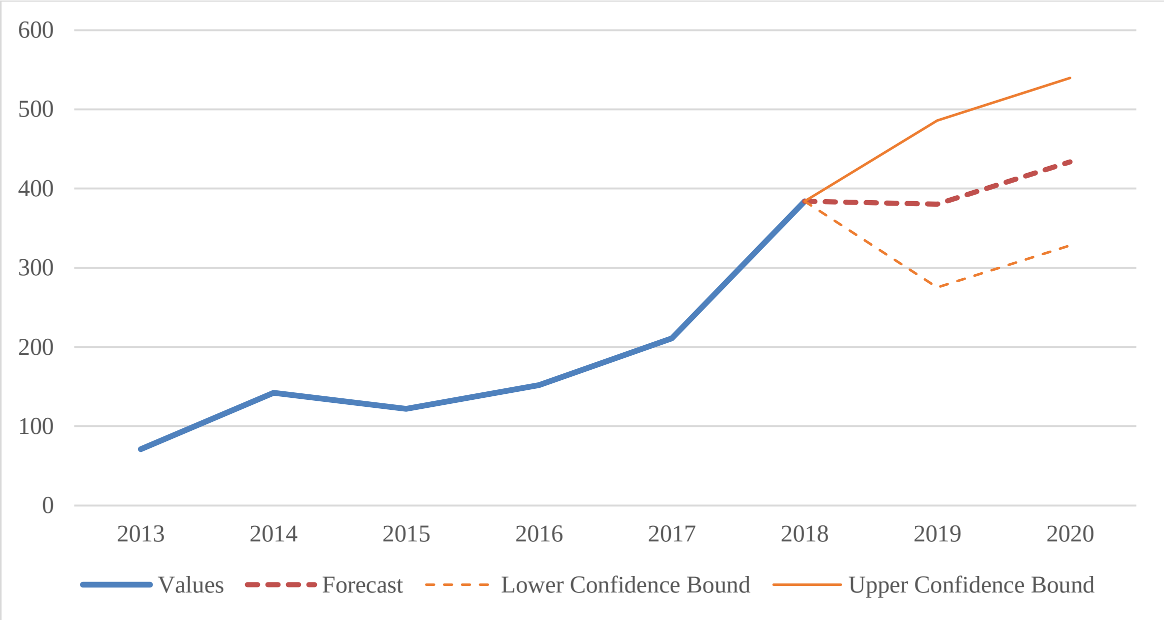

Figure 6: Number of deals by Venture capital firms in Blockchain technology and future deal count forecasts

6. Blockchain adoption in corporate governance

This section mainly present blockchain applications in the corporate governance sphere. We discuss applications of blockchain by financial institutions, taxation and initial coin offerings in two other studies. In our opinion, the work by stock exchanges around the world on blockchain is particularly significant, they signal that tokenization of shares will occur sooner rather than later. The key implementations of blockchain in clearing houses and securities exchanges are provided in Table 3.

Table 3: Present blockchain applications in corporate governance

Blockchain Application	Exchange	Year	Description and Use Case	Collaborating Tech Firm
LINQ	NASDAQ	2015	Blockchain platform for private bond and stock trade	
	Toronto's TMX Group		Blockchain platform for its Natural Gas Exchange (NGX)	
	Australian Stock Exchange (ASX)	2015	Replacing its clearing and settlement platform CHESS with blockchain technology	implemented by Digital Asset Holdings.
	Japan Exchange Group (JPX)		Developing a blockchain platform for trading low liquidity securities	IBM
Korean Startup Market	Korea Exchange	2017	To trade shares of start-up companies	
	India's National Stock Exchange (NSE)	2017	Conducted a blockchain trial of a KYC (know-your-customer) data protocol	
	Moscow Exchange (MOEX)		Exploring moving its National Settlement Depository (NSD) to a blockchain platform	
	Deutsche Börse and Deutsche Bundesbank	2016	Been testing blockchain platform prototypes for securities settlement	
	London Stock Exchange		Use of blockchain platforms to improve post-trade processing	

Table 3: Present blockchain applications in corporate governance (continued)

Blockchain Application	Exchange	Year	Description and UseCase	Collaborating Tech Firm
	Luxembourg Stock Exchange		Implemented a blockchain platform for a security system for digitally signed documents and related codes	
	Santiago Exchange is		Exploring blockchain technology to be applied across Chile's financial sector	IBM
	Hong Kong Exchange and Clearing (HKEX)		Enhance its post-trade infrastructure.	implemented by Digital Asset Holdings.
	the Singapore Exchange (SGX)	2018	Integrating Blockchain technology into its core infrastructure.	
	Zimbabwe Stock Exchange		Exploring adoption of blockchain technology	

Moving exchanges to blockchain platforms would reduce information redundancies, costs and speed of transactions, subsequently improving performance. However, a common risk with regard to blockchains are the issues of security of private keys (digital signature) which are proofs of ownership which can be stolen. Multi-signature transactions where signatures of all parties are required before agreement of a transaction may circumvent this issue.

6.1 Firm share tokenization

This article explores the effects of blockchain adoption in the corporate governance sphere such as the tokenization of a corporation's shares, which involves placing shares onto a blockchain and the resulting consequences and opportunities. Blockchain could provide unprecedented transparency to market participants to identify the ownership positions and transactions of debt, equity investors and insiders (managers). This would decrease moral hazard, fraud and errors by firms, exchanges and regulators alike. The tokenization of shares allows for increased efficiency. Specifically, in terms of accuracy and timeliness of shareholder voting, payment of dividends and a myriad of other uses including limiting empty voting. A further step of firms recording their transactions on the blockchain in real time and the impact on potential investors and regulators is also explored. Lee (2016) states that blockchain technology has advantages such as cost execution speed and settlement time reduction.

The ability to observe trading transactions historically as well as in real time, reduces information asymmetry and would significantly change incentives and profit opportunities for institutional investors, insiders and other traders in general. Securities maybe designed to better utilize the ability of smart contracts to be executed autonomously. There are, however, legal issues with the tokenization of a corporation's shares, not discussed in this study. Schroeder (2015) explores the legal implications of virtual assets existing on blockchains, classifying them as uncertificated securities under Article 8 of the Uniform Commercial Code.

Other implications of blockchain adoption would be spillovers to mergers and acquisitions. Even in market mechanisms such as mergers where building hostile positions for takeovers maybe hindered blockchains may become a part of takeover defense mechanisms. Whilst shareholders might become more passive similar to what is discussed in Grossman and Hart (1980)'s free-rider problem it is more likely that the increased transparency that blockchains offer may change and even expand the role of shareholders in corporate governance.

Malinova and Park (2017) state that identifying buyers and sellers would benefit markets in general and increase welfare. Thus, based on this argument, digital identity would be preferred over attempts to hide identity. In the U.S., stock trades generally take approximately three business days to settle. Many parties are involved in these transactions which occur under the Depository Trust Clearing Houses' supervision. Blockchains could reduce settlement times to minutes if not seconds, or slightly longer if public blockchains are used, and without the need for intermediaries reducing costs and commissions involved. Significantly improved liquidity would facilitate high frequency trading and demand for investments in stocks, and also create new investing strategies, objectives and dynamics.

Insiders/managers' buy order trades result in significant and stronger market reactions as opposed to sell orders Brochet (2010). Blockchains would enable easier differentiation of informed trading, subsequently increasing the information content and absorption into asset prices. This would be a departure from current market dynamics where the speed of bad news and good news to prices is slow (Hong, Lim, & Stein, 2000). Market makers would be able to observe all shares traded by investors. This would increase the quality of information content generated leading to more efficient prices and reduced risk premiums (Edmans, Levit, & Reilly, 2016). This would spillover to efficient resource allocation in the real economy and also better decision making internally at firms.

6.2 Corporate elections

Corporate elections are one of the many ways blockchains can be used in corporate governance. Corporate elections are often conducted through proxy voting systems. Kahan and Rock (2008) find that the current proxy voting systems are flawed as there are erroneous voter lists, incorrect vote tabulations and incomplete ballot distributions. Blockchain can be used to implement accurate proxy voting by allocating eligible voters a token or vote coin as a number that represents their voting power. Voters and the firm would be able to see that votes had been cast validly, but if desired, would not be able to see how particular voters voted. This in turn would greatly increase the cost, speed of voting, accuracy, reduced interference by management.

Listokin (2008) identify close elections as ending up in favor of management choices. Wright and DeFillipi (2015) state that the increased transparency, speed and reduced costs would result in more shareholder and other interested stakeholder participation. Thus, stakeholders may get involved directly in corporate governance and petition for votes on important firm decisions.

6.3 Empty voting

Empty voting involves using borrowed shares or derivative combinations to acquire voting rights on a temporary basis without being exposed to cashflow rights, monitoring, or enforcement of those securities (Hu &Black, 2006; Christoffersen, Geczy, Musto, & Reed, 2017). Shareholders engage in empty voting to make immediate profits or for long-term ownership motivations. Using blockchain for corporate elections and shares would make empty voting more difficult or even prevent it entirely. Smart contracts can be used so that there is a stand down period following the transfer of a share during which time that share has no voting rights.

Table 4 provides a summary of the implications of blockchain adoption in corporate governance and the link to traditional corporate governance theories in academic literature. Table 5 provides a summary of the implications of blockchain adoption in corporate governance to various market mechanisms and market participants according to prior literature and our opinion.

Table 4: Blockchain adoption implications and corporate governance theories

Corporate Governance Theory	Theory Description	Blockchain Adoption Implications
1. Shares of a corporation would be issued and held on a blockchain		
Agency Costs	Primary goal of good governance in firms is to protect shareholders and other stakeholders from the managerial discretion	Increased transparency and subsequent reduced information asymmetry would significantly change incentives and profit opportunities for managers.
Transaction cost theory	The organization and structure of a firm can determine price and production.	Reduced cost and speed of execution would greatly improve liquidity and information incorporation into asset prices. would facilitate high frequency 2. Increase demand for investments in stocks, and also create new investing strategies, objectives and dynamics. 3. The real time archiving of trades would result in information being incorporated to prices more speedily, making markets more efficient
Stewardship theory	stewards are company executives and managers working, protecting and making money for the shareholders.	Reduced information asymmetry and would significantly change incentives and profit opportunities for institutional investors, insiders and other traders in general
Resource dependency theory	Concentrates on the role of board directors in providing access to resources needed by the firm	Increased transparency may change and even expand the role of shareholders in corporate governance. 2. This may also hinder board of directors and interrupted by shareholders with no expertise in the relevant field.

Table 4: Blockchain adoption implications and corporate governance theories (continued)

Corporate Governance Theory	**Theory Description**	**Blockchain Adoption Implications**
Political theory	Considers the approach of developing voting support from shareholders, rather by purchasing voting power	
2. Corporate Voting		
Agency Costs	Primary goal of good governance in firms is to protect shareholders and other stakeholders from the managerial discretion	Voters and the firm would be able to see that votes had been cast validly, but if desired, would not be able to see how particular voters voted. This in turn would greatly increase the cost, speed of voting, accuracy, reduced interference by management.
Transaction cost theory	The organization and structure of a firm can determine price and production.	
Stewardship theory	Stewards are company executives and managers working, protecting and making money for the shareholders.	Increased transparency, speed and reduced costs would result in more shareholder and other interested stakeholder participation. Thus, stakeholders may get involved directly in corporate governance and petition for votes on important firm decisions.
Resource dependency theory	Concentrates on the role of board directors in providing access to resources needed by the firm	
Political theory	Considers the approach of developing voting support from shareholders, rather by purchasing voting power	Using blockchain for corporate elections and shares would make empty voting more difficult or even prevent it entirely. Smart contracts can be used so that there is a stand down period following the transfer of a share during which time that share has no voting rights.

Table 5: Stakeholders and blockchain adoption implications in corporate governance

Stakeholders	Behavioural Perspectives of Blockchain Adoption
1. Market Mechanisms	Mergers where building hostile positions for takeovers maybe hindered and blockchains may become a part of takeover defense mechanisms.
2. Shareholders	Whilst shareholders might become more passive similar to what is discussed in Grossman and Hart (1980)'s free-rider problem. It is more likely that the increased transparency that blockchains offer may change and even expand the role of shareholders in corporate governance. This may also hinder board of directors and managers' decision making especially if interrupted by shareholders with no expertise in the relevant field.
3. New Breed of Third Party Identity Verification Firms	Even if aliases are used for share purchases, third parties could earn fees for ascertaining the identity of share owners. These third parties would build upon the existing mechanisms used in financial markets to identify certain traders based on observed sequences, size and timing of trades.
4.Intermediaries and Exchanges	Blockchains could reduce settlement times to minutes if not seconds, or slightly longer if public blockchains are used, and without the need for intermediaries.
5. Insiders	Insiders/managers' buy order trades result in significant and stronger market reactions as opposed to sell orders Brochet (2010). Blockchains would enable easier differentiation of informed trading, subsequently increasing the information content and absorption into asset prices.
6. Retail Investors	Blockchain, with its increased transparency and (considerably) faster execution would be available to retail investors. The advantages previously available to institutional investors may be reduced and the playing field leveled.
7. Blockholders	The reduction in costs especially for selling shares via increased liquidity would enhance blockholder exits and would increase blockholders' power over managers (Edmans (2009)). The increased threat of exit by blockholders would result in managers pursuing shareholder value maximizing projects and deter them from projects with private benefits (Admati and Pfleiderer (2009)).

7. Blockchain governance and ethical aspects

Governance of blockchains is a key issue. Public blockchains are governed autonomously by a software code. The code specifies inputs, the priority and timing, limits the sizes or contingencies associated for encoding every transaction into the blockchain. These parameters of governance in a blockchain are similar to the regulations specified by stock exchanges for listed firms. Most corporations that are exploring blockchain projects are using permissioned blockchains such as a permissioned versions of Ethereum. However, as we have seen, even in permissioned blockchains, governance rules would need to be negotiated and renegotiated similar to partnerships or other customized financial contracts.

While decentralization is a core principle in blockchain and its numerous applications, more relevant to financial markets is the inability to alter or conceal transactions, thus limiting or removing a firm management's ability to influence firm accounting records and other business transactions ex-post. Fraudulent activities would be mitigated such as using employee stock options to extract private benefits at the shareholder's expense by backdating the option date when price levels are lowest. The high level of transparency provided by blockchain would reveal more high-quality information and increased speed to shareholders. This in turn would increase firm management's accountability to shareholders, regulators and other market participants.

Blockchain can help solve co-ordination, verification, authentication and enforcement issues such as extremely high transaction costs and the fact that many breaches of the law go unnoticed. Even if such breaches are identified, it is often too late and substantial harm has been caused. A final often overlooked feature of blockchain, is that blockchain can be used to prevent wrongdoing. For example, instead of designing a regulatory system to attempt to prevent empty voting, empty voting can be prevented as follows: Shares can be in effect programmed so that following the sale of a share that share would have no voting rights attached to it for a set period. Nor could a person "borrow" a share and vote using that share.

8. Conclusion

Blockchain technology has great potential in corporate governance to provide efficient solutions to many issues that adversely affect current systems. However, several issues of permissioned versus public blockchains, capital required, possibilities of hacking, lack of extensive research and understanding to name a few persist. This study analyses the implementation of blockchain with regard to applications in corporate governance. In addition, to our knowledge we are the first study, to conduct an empirical analysis on blockchain and related start-up investments. Our study differs from its contemporaries by providing not only a general technological overview, applications, link to theories in corporate governance and impact but behavioural and ethical perspective of such applications as well.

With regard to corporate governance, permissioned blockchains may still be used to limit transparency, yet absolute transparency may cause unwarranted shareholder panic. Thus, firms would most likely implement different accessibility levels. A key question is whether regulators should allow firms to limit transparency.

Blockchains may result in better corporate governance models with regard to corporate voting by higher accuracy and time stamping resulting in improved voting systems and better decision making by shareholders. Moreover, smart contracts implemented on blockchains provide unique and novel ways of governing corporates. However, as highlighted by this study, such progression should go hand in hand with the corresponding regulatory developments.

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Does idiosyncratic volatility matter in frontier markets?

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Abstract

The conventional belief of asset pricing theories is that idiosyncratic volatility can be fully diversified, so that it is not required to take into account. However, in the case of holding insufficiently diversified portfolios by the investors, the idiosyncratic volatility of stocks plays a vital role in asset pricing decisions. Using the five-factor asset pricing model of Fama and French (2015), together with the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH), estimated conditional idiosyncratic volatility of individual stocks of non-financial firms listed in the Colombo Stock Exchange (CSE) from September 2004 to March 2018. This study reveals a positive and statistically significant relation between average stock returns and idiosyncratic volatility. More importantly, the empirical findings of this study on profitability and investment yield striking evidence on idiosyncratic volatility of stocks which is a marked departure from previous studies on idiosyncratic volatility of stocks.

Keywords*:* CSE; EGRAPH; Five-factor asset pricing model; Idiosyncratic volatility

1. Background

The idiosyncratic volatility is considered to be firm specific, so that it does not move in line with the common movements of the market (Fu, 2009). Therefore, when estimating the relationship between risk and return of an asset, the capital asset pricing model (CAPM) assumes investors hold the market portfolio in equilibrium. Hence, it denotes that only market risk should be priced in stock returns as the idiosyncratic volatility can be fully eliminated through diversification (Pukthuanthong-Le & Visaltanachoti, 2009). However, Merton (1987) argues that, due to the existence of information asymmetries in the market, the investors cannot fully diversify the idiosyncratic volatility as they are unable to hold a well-diversified portfolio.

For instance, Goetzmann and Kumar (2008) depict that out of a sample of more than 62,000 households in United States during the period of 1991-1996, over 25 percent of the investor portfolios have only one stock, whereas more than 50 percent of the investor portfolios have not more than three stocks.

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Hence, this shows that the idiosyncratic volatility is an important factor in asset pricing as the investors are holding imperfectly investment portfolios (Merton, 1987).

Although various scholars have found different relationships between idiosyncratic volatility and average stock returns, Bali and Cakici (2008) note that this relation mainly depends on several factors such as choices of data frequency, portfolio weighting schemes, break point calculations and choice of screens in sample selection. Similarly, Fama (1998) reports that methodology and statistical approaches used in different studies have an impact on the long term returns of the stocks.

Furthermore, Pukthuanthong-Le and Visaltanachoti (2009) highlight that the existence of idiosyncratic volatility in the United States is a surprising result as it is considered to be one of the well performing stock markets in the world. More importantly, a considerable body of evidence on idiosyncratic volatility is focused on developed stock markets such as United States. Thus, it is important to investigate the existence of idiosyncratic volatility from another market context and how it affects the asset pricing decisions, since the empirical evidence on role of the idiosyncratic volatility on asset pricing decisions is inconclusive.

Accordingly, the current study revisits the relationship between average stock returns and idiosyncratic volatility in the Sri Lankan context[3] with an updated data set while using five-factor asset pricing model by Fama and French (2015). Even though the extant literature reveals evidence on the idiosyncratic volatility and average stock returns, it fails to provide evidence on profitability and investments of firms on the relation between average stock returns and idiosyncratic volatility. Thus, this study contributes to the existing literature by investigating the impact of firm profitability and investment levels on idiosyncratic volatility while employing EGARCH estimated condition idiosyncratic volatility to discuss whether the idiosyncratic volatility is priced on the stock returns.

2. Literature review

Markowitz (1952) quantifies the concept of diversification through the portfolio selection problem which laid the foundation for the Modern Portfolio Theory (MPT). It argues the risk of failures in the investments increases when all money is invested in one single asset. However, Fabozzi, Gupta, and Markowitz (2002), highlight that portfolio selection is a normative theory which explains what the investors should pursue than what is being actually followed by them, when constructing and selecting investment portfolios. In contrast, the asset pricing theory is a positive theory which attempts to hypothesize how the investors behave, than how they should behave by estimating the expected return of a portfolio, constructed based on mean-

[3]Sri Lanka is categorized as a frontier market in the Morgan Stanley Capital International (MSCI) classification.

variance analysis (Fabozzi et al., 2002). Thus, the asset pricing theory attempts to build a relationship between return of an asset and its risk.

The asset pricing theory marked its birth with the capital asset pricing model (CAPM) which is based on Markowitz's portfolio selection model. Although the CAPM argues that a diversified portfolio is capable of avoiding certain inherent risks of an asset, it lacks a clear demarcation of which particular risk component is relevant for the price of an asset (Sharpe, 1964). Although the CAPM offers powerful predictions on the measurement of risk and relationship between expected return and risk, the empirical record of the model is poor mainly due to its simplifying assumptions (Fama & French 2004). Thereafter, different asset pricing models have developed by incorporating several factors to determine the price of an asset. Accordingly, arbitrage pricing model (Ross, 1976), three-factor asset pricing model (Fama & French, 1993), four-factor asset pricing model (Carhart, 1997) and five-factor asset pricing model (Fama & French, 2015) have been developed to tackle with the relation between risk and return of an asset.

According to Merton (1987), the asset pricing models assume all publicly available information disseminates across all investors at the same time and they act upon them as quickly as they receive them. Hence, he argues that the financial models are built on the assumptions of availability of complete information and frictionless markets. However, different scholars have empirically proven the existence of various trading frictions in the market. For instance, price delay (Hou & Moskowitz, 2005), charging a higher level of taxes on dividends than long term capital gains (Miller & Scholes, 1982), illiquidity (Amihud, 2002; Amihud & Mendelson, 1986; Pastor & Stambaugh, 2003) are some of the important trading frictions in the market highlighted by the scholars. More importantly, Kumar (2009) shows there is a set of individuals who are willing to hold 'lottery-like' securities, where he defines such securities as low priced securities with high idiosyncratic volatility in the context of stock market. Similarly, Bali, Cakici, and Whitelaw (2011) confirm that imperfect diversification influences the investors to hold 'lottery-like' assets, where this questions the validity of the asset pricing models' assumption on, no compensation is required for holding idiosyncratic volatility.

The role of idiosyncratic volatility is assumed to be completely excluded through diversification, so that the conventional CAPM theory suggests only market risk should be priced in equilibrium (Malkiel & Xu, 2006). However, Merton (1987) argues that the asset pricing models are inadequate to capture the rationality of diversification decisions of the investors due to information asymmetry in the market. Furthermore, Ang, Hodrick, Xing, and Zhang, (2009) show that, since the idiosyncratic volatility is not correctly specified by a factor model, presence of incomplete information and market frictions create a likelihood of generating a link between average stock returns and idiosyncratic volatility. Thus, it highlights the importance of the role of idiosyncratic volatility in asset pricing decisions.

However, the idiosyncratic volatility has been estimated in different methods and frequencies in the previous studies. For instance, Bali, Engle and Murray (2016) estimate the idiosyncratic volatility on, one month, three months, six months, twelve months, one year, two years, three years and five years basis while Malkiel and Xu (2002), Fu (2009), Pukthuanthong-Le and Visaltanachoti (2009) estimate the idiosyncratic volatility on monthly basis. Further, in certain previous studies, one month lagged idiosyncratic volatility has been used in estimating the expected idiosyncratic volatility (Ang et al., 2006, 2009; Bali & Cakici, 2008).

On contrary, while highlighting the theoretical and empirical errors in estimating the expected idiosyncratic volatility using the one month lagged idiosyncratic volatility, certain scholars suggest the EGARCH technique of Nelson (1991) to estimate the expected idiosyncratic volatility (Fu, 2009; Kumari, Mahakud, & Hiremath, 2017; Pukthuanthong-Le & Visaltanachoti, 2009). As highlighted by Bali and Cakici (2008), the existence of methodological differences among previous studies led to conflicting arguments and thereby creation of a substantive puzzle in relation to the idiosyncratic volatility. As a result, Fu (2009) notes the importance of quality estimation of idiosyncratic volatility in deriving at the inferences between average returns and idiosyncratic volatility. Fu (2009) further argues that estimation of idiosyncratic volatility warrants a special attention due to its time varying property. Similar arguments put forth by Pukthuanthong-Le and Visaltanachoti (2009), where they find that idiosyncratic volatility is changing over time.

Fu (2009) criticizes the idiosyncratic volatility estimation process and the inferences made thereon by Ang et al. (2006). The empirical method of Ang et al.'s study implicitly assumes the time varying property of idiosyncratic volatility can be approximated by a random walk process. However, based on United States data Fu (2009) empirically proves that idiosyncratic volatility of stocks does not follow a random walk. Confirming the findings of Fu (2009), based on a sample of individual stock data across 36 countries, Pukthuanthong-Le and Visaltanachoti (2009) highlight that lagged idiosyncratic volatility of a stock in the current month is not an appropriate measurement to predict the next month's average return of a stock, as it leads to severe measurement errors. Thus, the empirical evidence of Fu (2009) and Pukthuanthong-Le and Visaltanachoti (2009) overwhelmingly highlight that it is inappropriate to use lagged idiosyncratic volatility of stocks to derive at the inferences between average stock returns and idiosyncratic volatility. Hence, they question the applicability of empirical findings of Ang et al. (2006) on empirical grounds.

Further, Malkiel and Xu (2002), Bali and Cakici (2008) and Fu (2009) empirically find that stocks with high idiosyncratic volatility are small in size and illiquid. However, Amihud (2002) shows that illiquidity leads to generate higher returns and this trading friction of illiquidity mainly deals with the small firms. Hence, it again questions the appropriateness of the empirical findings of Ang et al. (2006) to draw inferences between average stock returns and idiosyncratic volatility (Pukthuanthong-Le & Visaltanachoti, 2009).

3. Methodology

3.1 Sample and data

The population of the study consists of all the listed companies in the Colombo Stock Exchange (CSE). However, following Fama and French (1992), Samarakoon (1996), Abeysekera and Nimal (2016) and Riyath and Nimal (2016), this study has excluded the companies listed under the Banks, Finance and Insurance sector and stocks with negative book-to-market ratio from the sample. This is because the high leverage is a common characteristic for finance companies which does not have the same meaning as non-finance companies, where high leverage more likely to indicate distress risk (Fama & French, 1992).

Accordingly, the authors have obtained the monthly stock price details and other accounting details pertinent to 214 companies listed in the CSE over a period of 163 months from September 2004 to March 2018. The required data has obtained from the annual reports of the listed companies and CSE data library. Further, annual reports of Central Bank of Sri Lanka were also used to collect the other required data over the sample period of the study.

3.2 Operationalization

Table 1 shows the research models and variables used in the current study. Accordingly, the dependent variable of the current study is the monthly stock returns calculated for each individual stock. The Equation (1) shows the explicit functional form of calculating the monthly stock returns where R_{it} is the monthly return of stock i at time t and p is the monthly closing price of stock i.

$$R_{it} = ln\left(\frac{P_{it}}{P_{it-1}}\right) \quad (1)$$

Since, the purpose of the study is to investigate the influence of idiosyncratic volatility on average stock returns, the independent variable of the study is the expected idiosyncratic volatility of each stock. Accordingly, following Fu (2009), the authors have employed the EGARCH (p,q) model of Nelson (1991) to estimate the expected idiosyncratic volatility of stocks. Hence, this study has employed $1 \leq p \leq 3$, $1 \leq q \leq 3$ order where the permutation of these orders generate nine different EGARCH models: EGARCH (1,1), EGARCH (1,2), EGARCH (1,3), EGARCH (2,1), EGARCH (2,2), EGARCH (2,3), EGARCH (3,1), EGARCH (3,2), and EGARCH (3,3). Each model has employed for each stock independently and Akaike Information Criterion (AIC) has used to determine the best model for each stock. The square root of the conditional variance from the five-factor asset pricing model residuals estimated using an EGARCH model is the expected idiosyncratic volatility (EIVOL) of stocks. Further, in order to overcome the look-ahead biasness problem following Fu (2009) and Pukthuanthong-Le and Visaltanachoti (2009), current study requires firms to have at least 30 monthly return observations.

Furthermore, in order to examine the impact of each risk factor of the five-factor asset pricing model of Fama and French (2015) on the relationship between average stock returns and idiosyncratic volatility, the authors have controlled the aforementioned relationship for the risk factors of the asset pricing model used in the study. Accordingly, the association between average stock returns and idiosyncratic volatility is controlled for market risk premium, size, value, profitability and investment factors.

The market risk premium has calculated as the excess of all share total return index (ASTRI) return over risk free rate of return (i.e. three-month government treasury bill rate) (Abeysekera & Nimal, 2016; Riyath & Nimal, 2016). On the other hand, market size has determined through the market capitalization of each stock (Fama & French, 1992; Ang et al., 2006; Fu, 2009; Riyath & Nimal, 2016; Ediriwickrama, 2018) while the value of each stock has calculated through the book-to-market equity ratio of each firm (Fama & French, 1992; Ang et al., 2006; Fu, 2009; Riyath & Nimal, 2016; Ediriwickrama, 2018). Moreover, the profitability of each firm has determined by calculating the net profit of the firm as a fraction of its book equity (Ediriwickrama, 2018) whereas the growth of total assets of the firm has used to calculate the investment of each stock (Fama & French, 2015; Ediriwickrama, 2018).

For the purpose of construction of size, value, profitability and investment factors, portfolios need to be formed. In Sri Lanka, there are two financial year-end periods, namely December 31 and March 31. Hence, the CSE requires all the listed companies in the CSE to publish their audited financial statements within six months from the financial year-end date. Accordingly, the CSE requires the listed companies with December 31 financial year-end date to publish their audited financial statements by June, while for the listed companies with March 31 financial year-end date, it is September.

Therefore, following Samarakoon (1996) and Abeysekera and Nimal (2016), September 30th of each year has been chosen as the portfolio formation date for the purpose of factor calculation in the current study. Hence, the portfolios have formed at the end of September of each year *t*, and they have reformed at the end of September t+1. Further, Abeysekera and Nimal (2016) note that this approach for portfolio formation in order to calculate the risk factors allows to avoid the problem of look-ahead biasness**.** Table 2 shows a summary of factor construction in the current study.

Table 1: Research models and variables

Panel A: Research Models

Model A 1	**Equation**
EGARCH (p,q)	
Model 01 (Mean equation)	$R_{it} - R_{ft} = \alpha_i + b_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + r_i RMW_t + c_i CMA_t + \varepsilon_{it}$ *where* $\varepsilon_{it} \sim N(0, \sigma_{it}^2)$
Model 01 (Variance equation)	$ln\sigma_{it}^2 = \alpha_i + \sum_{l=1}^{p} b_{i,l} \ln\sigma_{it-1}^2 + \sum_{k=1}^{q} c_{i,k} \left\{ \theta \left(\frac{\varepsilon_{i,t-k}}{\sigma_{i,t-k}} \right) + \gamma \left[\left\| \frac{\varepsilon_{i,t-k}}{\sigma_{i,t-k}} \right\| - \sqrt{\frac{2}{\pi}} \right] \right\}$
Model A 2	**Equation**
OLS Regressions	
Model 02	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \varepsilon_t$
Model 03	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \lambda_2 (R_m - R_f)_t + \varepsilon_t$
Model 04	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \lambda_2 SMB_t + \varepsilon_t$
Model 05	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \lambda_2 HML_t + \varepsilon_t$
Model 06	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \lambda_2 RMW_t + \varepsilon_t$
Model 07	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \lambda_2 CMA_t + \varepsilon_t$
Model 08	$\widehat{R_t} = \lambda_0 + \lambda_1 EIVOL_t + \lambda_2 (R_m - R_f)_t + \lambda_3 SMB_t + \lambda_4 HML_t + \lambda_5 RMW_t + \lambda_6 CMA_t + \varepsilon_t$

Panel B: Variables

Variable	**Description**
R_{it}	Monthly stock return of stock *i* at month *t*.
R_{ft}	Three-month treasury bill rate as a proxy for the risk free rate.
$(R_{mt} - R_{ft})$	Excess return on a broad market portfolio (all share total return index (ASTRI)).
SMB_t (small minus big)	Average of difference between the return on a portfolio of small stocks and the return on a portfolio of big stocks at time *t* calculated based on book-to-market ratio, profitability and investment.
HML_t (high minus low)	Difference between the return on a portfolio of high book-to-market stocks and the return on a portfolio of low book-to-market stocks at time *t*.
RMW_t (robust minus weak)	Difference between the return on a portfolio of robust profitable stocks and the return on a portfolio of weak profitable stocks at time *t*.
CMA_t (conservative minus aggressive)	Difference between the return on a portfolio of low/conservative investment stocks and the return on a portfolio of high/aggressive investment stocks at time *t*.
$\ln\sigma_{it}^2$	Log of the conditional variance of the stock returns of stock *i* at time *t*.
α_i	Constant in EGARCH model.

Table 1: Research models and variables (Continued)

Variable	Description
b_i , c_i	Vector of coefficients.
γ	Asymmetric coefficient.
$\widehat{R_t}$	Time series average return.
$EIVOL_t$	Average one month ahead idiosyncratic volatility estimated through the EGARCH model.
ε_t	Random error term.
λ_0	Intercept in OLS models.

Note: Researchers' construction based on Nelson (1991) and Fama and French (2015). The conditional distribution of residuals (ε_{it}) in the mean equation of Model 01 is based on the set of information at t-1 which is assumed to be normal with the mean of zero and variance of σ_{it}^2. Further, the conditional variance (σ_{it}^2) in the variance equation of Model 01, is a function of past p-period of residual variance and past q-period of return shocks where $\alpha_i > 0$, $b_i + c_i < 1$, and $\lambda<0$ if volatility is asymmetric. The factor construction is described in detailed in Table 2.

Table 2: Summary of factor construction

Factor	Factor Construction Procedure
SMB_t (Fama & French, 2015)	$SMB_{B/M}$ = (SL + SN + SH)/3 – (BL + BN + BH)/3 $SMB_{Porfitability}$ = (SR + SN + SW)/3 – (BR + BN + BL)/3 $SMB_{Investment}$ = (SA + SN + SC)/3 – (BA + BN + BC)/3 SMB_t = ($SMB_{B/M}$ + $SMB_{Profitability}$ + $SMB_{Investment}$)/3
HML_t (Fama & French, 1993)	HML_t = (SH + BH)/2 – (SL + BL)/2
RMW_t (Fama & French, 2015)	RMW_t = (SR + BR)/2 – (SW + BW)/2
CMA_t (Fama & French, 2015)	CMA_t = (SC + BC)/2 – (SA + BA)/2

Note: Researchers' construction based on Fama and French (1993, 2015).

4. Analysis and discussion

4.1 Descriptive statistics

The descriptive statics of the variables used in the study are presented in Table 3. Accordingly, it shows that the mean value of the average stock returns of the individual stocks is 0.93 percent (t = 1.655).with a standard deviation of 7.15 percent in the current study whereas Fu (2009) reported a mean expected return value of 1.18 percent with respect to the United States individual stocks.

Table 3: Descriptive statistics

	$\hat{R}$	R_m-R_f	*SMB*	*HML*	*RMW*	*CMA*	*EIVOL*
Mean	0.93%	-8.89%	0.37%	0.60%	0.45%	0.06%	10.61%
Std. Dev.	7.15%	7.42%	3.04%	4.22%	3.82%	3.27%	1.81%
t-Mean	1.655	-15.233	1.542	1.798	1.506	0.241	74.758

Note: $\hat{R}$ is the average stock returns. R_m-R_f is the market factor where the market risk premium is the excess of ASTRI return over risk free rate of return (i.e. three-month government Treasury bill rate). SMB is the monthly size factor where HML is the monthly value factor. RMW and CMA are monthly profitability and investment risk factors respectively. EIVOL is the monthly expected idiosyncratic volatility of stocks estimated through the EGARCH model by using Fama and French (2015) five-factor asset pricing model.

Source: Researchers' construction.

Moreover, the mean value of the market risk premium is found to be – 8.89 percent (*t* = -15.233) where Abeysekera and Nimal (2016, 2017) report a mean market factor of 1.17 percent. Further, during the period under consideration, market factor is found to be highly volatile compared to other risk factors with a standard deviation of 7.42 percent. These results are in line with the findings of Abeysekera and Nimal (2016, 2017) in relation to the CSE where Ang et al. (2009) also reported similar findings in relation to the Asian countries.

The size factor has recorded a mean value of 0.37 percent (*t* = 1.542) with a standard deviation of 3.04 percent for the period under consideration in the current study. Similarly, Ang et al. (2009) recorded an average size factor value of 0.53 percent for Asia where the result of mean value of size factor closer to zero is in line with the findings of Fama and French (2012), Abeysekera and Nimal (2016, 2017).

The average value factor per month is found to be 0.6 percent (*t* = 1.798) with a standard deviation of 4.22 percent with respect to the CSE. Moreover, Fama and French (2012) report an average value factor value of 0.62 percent for Asia Pacific while Ang et al. (2009) report a mean value of 0.72 percent for value factor in Asia. While being in line with these findings, the results of the current study in relation to the mean value of the value factor are more or less in line with the findings of Abeysekera and Nimal (2016, 2017) who reported a mean value factor of 0.54 percent in the Sri Lankan context.

As per Table 3, the average profitability per month is found to be 0.45 percent (*t* = 1.506) per month with a standard deviation of 3.82 percent. On the other hand, the mean value of the investment factor is found to be 0.06 percent (*t* = 0.241) with a standard deviation of 3.27 percent. However, these findings in relation to the CSE is somewhat contrasting to the findings in the United States context where Fama and French (2015) reported a mean value of 0.25 percent and 0.33 percent for profitability and investment factors respectively.

The descriptive statistics further demonstrate a mean value of 10.61 percent (t = 74.758) for the expected idiosyncratic volatility. This is more or less in line with the findings of Fu (2009) who reports a mean value of 12.67 percent for the expected idiosyncratic volatility of stocks in the United States. However, Pukthuanthong-Le and Visaltanachoti (2009) report a mean value for expected idiosyncratic volatility ranging from 8.73 percent (Switzerland) to 21.93 percent (India) while relatively higher mean value (15.98 percent) for Sri Lanka.

4.2 Correlation analysis

Table 4 demonstrates the correlations of the variables used in the study where the expected idiosyncratic volatility has found to be positively and significantly correlate with the average stock returns. Similarly, Fu (2009) reports more or less similar result with respect to the United States individual stocks. Moreover, the market risk premium also found to be having a highly positive and significant correlation with the average stock returns. However, the market risk factor demonstrates a negative and statistically insignificant correlation with the expected idiosyncratic volatility. On the other hand, the size factor is found to be positively correlated with all variables except for value and profitability factors.

In contrast, the value factor is found to be negatively correlated with all variables except for the expected idiosyncratic volatility and market risk premium. Nevertheless, the profitability and investment factors are found to be positively correlated with the average stock returns where profitability is found to be negatively correlated with the idiosyncratic volatility while the investment factor is found to be positively correlated with the same. Furthermore, the profitability factor is found to be negatively correlated with the size, value and investment factors while it is positively correlated with the market risk premium. Moreover, the investment factor is found to be negatively correlated with market, value and profitability factors where it is found to be positively correlated with the size factor.

Table 4: Correlation matrix

	$\hat{R}$	*EIVOL*	R_m-R_f	*SMB*	*HML*	*RMW*	*CMA*
$\hat{R}$	1						
EIVOL	0.1758**	1					
	(2.2593)	-----					
R_m-R_f	0.4266*	-0.0655	1				
	(5.9668)	(-0.8297)	-----				
SMB	0.1637**	0.1290	0.0903	1			
	(2.0984)	(1.64597)	(1.1464)	-----			
HML	-0.0466	0.0447	0.2953*	-0.0500	1		
	(-0.5905)	(0.5655)	(3.9092)	(-0.6338)	-----		
RMW	0.0707	-0.0660	0.0483	-0.2372*	-0.1540***	1	
	(0.8960)	(-0.8366)	(0.6116)	(-3.0881)	(-1.971)	-----	
CMA	0.0306	0.0940	-0.14***	0.0603	-0.2097*	-0.1714**	1
	(0.3867)	(1.1941)	(-1.7889)	(0.7646)	(-2.7130)	(-2.2002)	-----

*Note: $\hat{R}$ is the average stock returns. EIVOL is the monthly expected idiosyncratic volatility of stocks estimated through the EGARCH model by using Fama and French (2015) five factor asset pricing model. R_m-R_f is the market factor where the market risk premium is the excess of ASTRI return over risk free rate of return (i.e. three-month government treasury bill rate). SMB is the monthly size factor where HML is the monthly value factor. RMW and CMA are monthly profitability and investment risk factors respectively. *, **, and *** indicate 1 percent, 5 percent, and 10 percent level of significance respectively while t statistics are reported in parentheses.*

Source: Researchers' construction.

4.3 Regression results

Model 02

Interestingly, a positive and statistically significant relation is found between average stock returns and expected idiosyncratic volatility of stocks in all seven regressions specified in the study. The univariate regression of average stock returns on expected idiosyncratic volatility of stocks specified in the Model 02 depicts a positive and statistically significant relation between average stock returns and expected idiosyncratic volatility. Further, these findings are in line with the empirical findings of Fu (2009), Pukthuanthong-Le and Visaltanachoti (2009) with respect to idiosyncratic volatility and average stock returns. Thus, it clearly proves the presence of idiosyncratic volatility in the Sri Lankan context and rejects the phenomenon that idiosyncratic volatility should not be priced in equilibrium as it can be fully diversified.

Model 03

Even though the regression results demonstrate a positive and statistically significant relation between average stock returns and expected idiosyncratic volatility in all regression specifications of the study, the magnitude of the association is substantially varying from one model to another. For instance, the magnitude of the expected idiosyncratic volatility is quite high in Model 03 (0.7795) compared to Model 02 (0.7093). When the market risk factor is added to the Model 03, the regression coefficient of expected idiosyncratic volatility becomes substantially large. In fact, Model 03 has recorded the highest magnitude for the expected idiosyncratic volatility out of the seven OLS regression models specified in the study. Further, a positive and statistically significant market factor can also be observed where similar positive and statistically significant market factor is reported by Abeysekera and Nimal (2017) in the Sri Lankan context.

This clearly confirms that market risk or systematic risk is not the only risk that should be priced in equilibrium. Hence, it clearly supports the argument of Merton (1987) that the investors do consider total risk, but not only the market risk. Thus, the investors expect a premium for the idiosyncratic volatility (Merton 1987; Bali & Cakici, 2008). These findings are in line with Pukthuanthong-Le and Visaltanachoti (2009) in the Sri Lankan context. However, there is a slight difference in the empirical findings between the current study and Pukthuanthong-Le and Visaltanachoti (2009) in terms of the magnitude of expected idiosyncratic volatility, where Pukthuanthong-Le and Visaltanachoti (2009) report a lower magnitude (0.1201) for the expected idiosyncratic volatility. Nevertheless, as Bali and Cakici (2008) highlight, presence of methodological differences in the studies can generate different empirical outcomes.

Model 04

The Model 04 demonstrates the relation between average stock returns and idiosyncratic volatility after controlling for the size effect. Albeit the relation between average stock returns and expected idiosyncratic volatility is positive, it is marginally significant at 10 percent level of significance. More interestingly, coefficient of the expected idiosyncratic volatility records the lowest magnitude out of the seven OLS regression models specified in the study. However, this is not a surprising empirical finding.

According to the empirical findings of Model 02 of this study, it is found that stocks with higher idiosyncratic volatility generate higher average returns. Moreover, Hou and Moskowitz (2005), Ang et al. (2006), Bali and Cakici (2008) and Fu (2009) note that idiosyncratic volatility is high with small stocks. On other hand, in the conventional size effect Fama and French (1993) argue that small firms generate higher average returns where in the current study, size factor is found to be positive and statistically significant in relation to the expected stock returns. Thus, when the average stock returns and idiosyncratic volatility is controlled for the size effect, the positive relation between average stock returns and idiosyncratic volatility should be weaken. Hence, the regression results in Table 5 exactly demonstrate this phenomenon.

Model 05

Moreover, the average stock returns and expected idiosyncratic volatility is controlled for value effect by adding value factor as an independent variable in the Model 05. Accordingly, the regression results in Table 5 demonstrate a positive and statistically significant relation between average stock returns and expected idiosyncratic volatility. On the other hand, value effect is found to be negative and statistically insignificant. This finding is quite interesting as it clearly contradicts with the widely documented value effect that valued firms generate higher average returns.

However, Fama and French (2015) note that the value factor (*HML*) is a redundant factor in the five-factor asset pricing model. This is because, Fama and French (2015) argue that the exposure of the value factor to other factors in the model has absorbed mean *HML* return. Since, the present study has employed Fama and French (2015) five-factor asset pricing model to estimate the expected idiosyncratic volatility, the aforementioned reason could be the cause for this negative relationship. Similar type relation can be observed in Model 08 with respect to the value factor. Furthermore, Fama and French (2015) highlight that *HML* is incapable of improving and constructing a mean-variance-efficient tangency portfolio by combining the risk free assets along with the other risk factors (i.e. market factor, size factor, profitability factor and investment factor).

Table 5: Regression results

	Model 02	Model 03	Model 04	Model 05	Model 06	Model 07	Model 08
C	-0.0647**	-0.0366	-0.0498	-0.0666**	-0.0689**	-0.0665**	-0.0331
	(-2.1489)	(-1.3824)	(-1.5658)	(-2.1276)	(-2.2047)	(-2.1908)	(-1.2626)
EIVOL	0.7093**	0.7795*	0.5291***	0.7180**	0.7285**	0.7267**	0.7767*
	(2.5288)	(3.1904)	(1.7816)	(2.4638)	(2.5047)	(2.5700)	(3.1871)
R_m-R_f		0.4349*					0.4709*
		(7.2957)					(7.5731)
SMB			0.3852**				0.1988
			(2.1836)				(1.3145)
HML				-0.0805			-0.2530**
				(-0.7391)			(-2.2533)
RMW					0.1609		0.1586
					(1.1781)		(1.2967)
CMA						-0.0893	0.0731
						(-0.5688)	(0.5270)
Adjusted R^2	0.2033	0.3940	0.1146	0.1419	0.1464	0.1999	0.4195
F statistics	11.2710*	21.9339*	7.9461*	7.6544*	7.9050*	9.0426*	13.9253*
Observations	162	162	162	162	162	162	162

*Note: $\hat{R}$ is the average stock returns. R_m-R_f is the market factor where the market risk premium is the excess of ASTRI return over risk free rate of return (i.e. three-month government treasury bill rate). SMB is the monthly size factor where HML is the monthly value factor. RMW and CMA are monthly profitability and investment risk factors respectively. EIVOL is the monthly expected idiosyncratic volatility of stocks estimated through the EGARCH model by using Fama and French (2015) five factor asset pricing model. *, **, and *** indicate 1 percent, 5 percent, and 10 percent level of significance respectively while t statistics are reported in parentheses.*

Source: Researchers' construction

In other words this indicates that the investors are unable to fully diversify the idiosyncratic volatility. Hence, they would demand an idiosyncratic volatility premium over their investments. Based on this argument, it is evident that if the value factor (*HML*) is included in regression model, then the magnitude of the idiosyncratic volatility should be stronger. This idea can be clearly observed through the results of the Model 05 (see Table 5) where the magnitude of the expected idiosyncratic volatility is much stronger compared to the magnitude of the expected idiosyncratic volatility reported in Model 02.

Model 06

Additional to the above empirical findings, the results of Model 06 to Model 08 depicted in Table 5 yield novel striking evidence with respect to expected idiosyncratic volatility of stocks. According to the Model 06, when the relation between average stock returns and expected idiosyncratic volatility is controlled for the profitability of firms by adding profitability factor as an independent variable, the expected idiosyncratic volatility shows a positive and statistically significant relation with the average stock returns. Further, the magnitude of the coefficient is also relatively higher compared to the coefficient reported in Model 02.

Therefore, after controlling for the profitability, the positive relation of expected idiosyncratic volatility with the average stock returns has become even stronger indicates that investors might expect a higher compensation for bearing the idiosyncratic volatility. This is quite novel and interesting empirical evidence on idiosyncratic volatility. Albeit its positive relation with the average stock returns, the profitability factor is found to be statistically insignificant. This could be a reason for less strong positive relation between average stock returns and expected idiosyncratic volatility.

Model 07

Another featuring evidence of this study in relation to the idiosyncratic volatility is depicted in Model 07 (see Table 5). That is the impact of investment factor on the association between average stock returns and expected idiosyncratic volatility of stocks. Accordingly, the results show a positive and statistically significant relation between average stock returns and expected idiosyncratic volatility of stocks when it is controlled for the investment factor. Similar to previous finding on profitability, a much strong positive relation between average stock returns and expected idiosyncratic volatility is found in Model 07.

This result perhaps indicates that the investment in assets is lower for the firms with high idiosyncratic volatility. Thus, it sheds the light on the argument of Merton (1987) that the investors expect a higher compensation for high idiosyncratic volatility. However, perhaps the negative and statistically insignificant relation of investment factor with the expected stock returns might be a reason for a positive, but less strong relation between expected stock returns and expected idiosyncratic volatility.

Model 08

The full specification of the five-factor asset pricing model is depicted in Model 08 (see Table 5). The empirical results of this model are quite in line with the previous discussion of this section. However, the striking evidence with respect to the idiosyncratic volatility is that, Model 08 records the second strongest positive relation between average stock returns and expected idiosyncratic volatility while the Model 08 reports the highest adjusted R squared value of approximately 42 percent. Hence, these empirical findings confirm the presence of idiosyncratic volatility in the Sri Lankan context. Furthermore, armed with the empirical evidence on the positive association between average stock returns and expected idiosyncratic volatility emphasizes that the investors demand a higher compensation for stocks with higher idiosyncratic volatility. More importantly, this empirical finding of positive association between expected stock returns and expected idiosyncratic volatility is clearly in line with the previous empirical findings of Fu (2009), Pukthuanthong-Le and Visaltanachoti (2009) and Kumari et al. (2017).

In addition to above, based on the *F* statics results, all seven OLS regression models (Model 02 to Model 08) specified in the study are found to be highly statistically significant (see Table 5). Hence, it ensures the precision of the inferences drawn between expected stock returns and idiosyncratic volatility of stocks.

5. Conclusion

Idiosyncratic volatility does not command a risk premium as all asset pricing models assume that investors can create well diversified portfolios with many securities, so that investors can avoid the exposure to idiosyncratic volatility (Bali et al., 2016). Since all theories assume that all markets are frictionless and complete information is available to all investors, investors are having zero level of exposure to the firm specific risk (Merton, 1987). However, the empirical evidence, particularly from the developed market context, clearly shows the presence of idiosyncratic volatility and investors are demanding idiosyncratic volatility premium due to imperfect diversification of their investments (Ang et al., 2006; Bali & Cakici, 2008; Fu, 2009).

The empirical evidence of this study demonstrated that there is a positive and highly statistically significant association exists between average stock returns and idiosyncratic volatility in the Sri Lankan context. Further, it indicated that the investors are expecting a higher level of premium for idiosyncratic volatility as they hold imperfectly diversified portfolios. Hence, this clearly questions the validity of the assumption of idiosyncratic volatility should not be priced at equilibrium.

Some novel striking evidences of the current study are the impact of the profitability and investment factors on the average stock returns and idiosyncratic volatility relationship. Accordingly, the findings of the current study demonstrated that the idiosyncratic volatility premium becomes stronger when it is controlled for the profitability and investment factors. Hence, it seems high idiosyncratic volatility is coupled with less profitable firms with lower level of investments. Thus, it is important to further study on the behavior of the idiosyncratic volatility with respect to profitability and investment of firms.

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Impact of risk management capabilities on stock returns of banks: Evidence from listed commercial banks in Sri Lanka

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Abstract

Risk management practices of financial institutions play a significant role in financial stability and thereby strengthen the confidence of stakeholders. The purpose of this study is to examine the impact of banks' risk management capabilities on stock returns. Four basic risk management capability measures are used for this purpose.The data from the financial reports of eight listed commercial banks for the period from 2006 to 2018 are used for the analysis. The DuPont analysis of ROE calculation is used to identify four risk management variables such as interest rate risk management, bank income diversification, credit risk managementand solvency risk management. The standard market model is estimated using two different regressions as regression 01 and regression 02 to capture the impact of firm size (control variable) on the whole model.The findings of regression 01 and regression 02 reveal that market return (R_{mt})and income diversification (NNIM) are significant to predict bank stock returns. However, Interest rate risk management capability (NETIM), credit risk management capability (PROV), solvency risk management capability are insignificant variables under both models. The impact of firm size on the whole model is also insignificant and there is an insignificant positive relationship between bank stock returns and firm size (TA). Therefore, bank managers can employ effective strategies to increase non-interest income, hence it contributes to generate a higher return for the shareholders. Therefore, the study suggests shareholders to purchase the stocks of banks which has increased non-interest income and to aware on the market index changes in order to increase their returns.

Keywords*:* Bank income diversification; Risk management capability; Stock returns

1. Background of the study

Financial institutions are very important in any economy and their role is similar to that of blood arteries in the human body, because financial institutions pump financial resources for economic growth from depositors to where they required (Shamugan& Bourke, 1990). As financial intermediaries and banks are the center of a country's financial system, especially in countries where capital markets are underdeveloped (Cong et al., 2013) and play an important role in the economic development of the country as a whole (Levine, 2005). In fact, the foundation of a sound economy depends on how sound the banking sector is and vice versa. Therefore the safeness and

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soundness of the financial system are crucial to the economic health of a country.

In general, banking business is regarded as risky business. In the economy there are two economic units :surplus units and deficit units.These economic units prefer to use financial institutions as intermediaries to transfer the necessary funds to each other.As a result, financial intermediaries are vital to accept the deposits from surplus units under shorter maturities and issue loans under longer maturities . Eventhough this process is very important in the economy, it poses some risks to these intermediaries, since they involve with maturity intermediation. Banks as an intermediary between surplus units and deficit units face different risks inherent to there business such as credit risk, interest rate risk, solvency risk, market risk and liquidity risk and so on.They face credit risk when their customers fail to repay the loans. When banks are having insufficient liquid assets to compensate the cash needs or withdrawals from depositors, they face liquidity risk which falls them in to a solvency risk at the end. Banks faces interest rate risk since the rate of interest is determinded by the market forces where it finally impact to bank income and expenses. Therefore managing such risks are important strategic decision in their banking business.

Like other banks in the world, Sri Lankan banks are also affected by both financial and non-financial risks.These risk factors affect the efficiency of banks in the provision of banking services, banks' operations and particularly banks' performance. It is therefore imperative that there are systems in place to handle their risk exposures, since bank crisis always arises from an inappropriate identification, measurement, pricing or control of risk (Sironi &Resti, 2007). A sound banking system with good performance indicators necessitates sound risk management and regulatory frameworks. However, it should be borne in mind that banks are very fragile institutions which are built on customers' trust, brand reputation and above all dangerous leverage. In case something goes wrong, banks can collapse and failure of one bank is sufficient to send shock waves right through the economy. Because taking risk is an integral part of the banking business, it is not surprising that banks have been practicing risk management ever since there have been banks, the industry could not have survived without it (Meyer, 2000).

The global regulators like Basel Committee on banking supervision and local regulators in individual countries have recognized the importance of managing risk as a major part of the financial system in the economy and the importance of the bank risk management. Therefore, the management of integrated risks in an integrated manner is essential to promote the soundness of the banking system.

Agency theory introduced by Jensen and Meckling (1976) suggests that managers should act in the best interest of shareholders by taking action that maximizes shareholder wealth, because shareholders are the legal owners of the company. All traditional finance literature confirms that investors should be rational and risk-averse individuals who formally analyze one course of action in relation to another for maximum benefit (Hill, 2008). As a result,the investor has the ability to select the stock of a company which maximizes their wealth. Shareholders do no invest in the companies which do not address their wealth. An increase in shareholder value not only increases the confidence of existing shareholders, but also attracts new investors (Arif & Anees, 2012). In other words, shareholder value is the sum of all strategic decisions that affect the firm's ability to efficiently increase the amount of free cash flow over time which can be measured by the share price movements. The risk management is also a strategic decision which affects the earning power of the firm. Accordingly, if shareholder value is affected by risk management capability of a bank, definitely they analyze the risk management capability of the banks before making investment decisions. Therefore, it is interesting to investigate whether risk management capability of banks contributes to generate shareholder value.

The objective of this study is to examine the impact of risk management capabilities of banks on their stock returns. Stock returns were selected as a proxy to represent shareholder value, because it is a more direct and market-based measure to represent shareholder value,even though more sophisticated accounting and market-based measures have been developed. Sri Lankan listed commercial banks were selected for the study and four basic risk management capabilities of credit risk management capability, interest rate risk management capability, solvency risk management capability, and bank income diversification were identified to represent basic risk management capabilities. Standard market model was used to estimate the relationship between risk management variables and stock returns.

2. Literature review

2.1 Risk management and shareholder value

Many researchers have examined the impact of risk management on shareholder value in various industries. Fan and Shuffer (2004) studied the relationship between the bank efficiency and risk in the US commercial banks and they concluded that credit risk and solvency risk sensitive to profit efficiency, but liquidity risk as an insignificant factor for banks profit efficiency. Bartram (2000) found risk management at the firm level (as opposed to risk management by stock owners) means to increase firm value to shareholders in the presence of a convex corporate tax regime in corporations. Smithson and Simkins (2005) investigated the relationship between the use of risk management and the value of the firm with respect to industrial firms and financial institutions and concluded risk management as a value-adding activity. Sensarma and Jayadev (2009) ascertained the sensitivity of Indian bank stocks to risk management and they concluded that risk management capabilities have been improving over time and returns on the banks’ stocks appear to be positively sensitive to risk management capability of banks. They have used standard DuPont analysis of ROE calculation to derive the risk management variables of the banks. Fathi, Zarei, and Esfahani (2012) found that no significant correlation between credit risk and ROE, but interest rate risk and diversification risk have a positive significant correlation with ROE for the banks listed in the Tehran Stock Exchange (TSE).This study used standard DuPont analysis for the identification of independent variables (credit risk, interest rate risk and diversification risk). According to the study conducted by Babi (2015) proved that the credit and solvency risks had negative and significant effects on the relationship between earnings per share and stock returns, but the effect of liquidity risk on this relationship was not significant. Saeidi and Kamali (2016) investigated the relationship between stock returns and risk management of banks listed in Tehran Stock Exchange. They found a significant relationship between capital risk and stock returns contradictory to the results of Sensarma and Jayadev (2009). Furthermore, they concluded that credit risk management as a significant factor for stock returns and interest rate risk and natural hedging strategy as insignificant variables to the bank stock returns. Ekinci (2016) found that Credit risk and FX rate have a positive and significant effect, but interest rate has an insignificant effect on banking sector profitability and credit and market risk have a positive and significant effect on conditional bank stock return volatility in the Turkish banking sector.

2.2 Interest rate risk and shareholder value

In broad terms, Interest rate risk is the exposure of a bank's financial condition to adverse movements in interest rates. Accepting this risk is a normal part of the banking business and can be an important source of profitability and shareholder value. In the literature, researchers have paid special attention to interest rate risk and bank performance measured and analyzed using various measures.

Lloyd and Shick (1977) found a significant relationship between bank stock return and interest rate risk using two index model introduced by Stone. Lynge and Zumwalt (1980) concluded that approximately 80% of banks and half of industrial companies are sensitive to interest rates, but the magnitude of bank exposures are larger than for industrial companies. Flannery and James (1984) found that common stock returns of financial institutions are correlated with interest rate changes. Booth and Officer (1985) also fund that bank stocks are sensitive to actual, anticipated, and unanticipated changes in short-term interest rates. Choi, Elyasiani, and Kopecky (1992) concluded that bank equity returns were significantly negatively related to interest rates only for the post-October 1979 period in the US. According to the Elyasiani and Mansur (2004), short term and long-term interest rates and their volatilities do exert significant and differential impacts on the bank stock returns where short term interest rate changes negatively related and long term interest rate changes positively related to stock return changes. Using the sample of daily stock returns of UK banks, Joseph and Vezos (2006) observed a positive relationship between interest rate risk and bank stock returns in OLS and negative coefficient in EGARCH model.

2.3 Credit risk and shareholder value

Credit risk is the possibility of losses arising from the diminution in the credit quality of borrowers or counterparties and credit risk could arise from the banking book and the trading book and both on or off balance sheet. The increasing variety in the types of counterparties and the ever-expanding variety in the forms of obligations (from auto loans to complex derivatives transactions) has meant that credit risk management has jumped to the forefront of risk management activities carried out by firms in the financial services industry (Fatemi & Fooladi, 2006). Therefore, credit risk played special attention of bank management to minimize possible future losses which attracted the interest of researchers for investigations. In contrast with other risks, credit risk and bank performance are considerably researched areas in Sri Lanka.

Arif, Abrar, and Afzal (2012) examined the role of credit risk in the value creation process in the banking system of Pakistan and the results show that LLP has a positive association with return on shares, which means the investors perceive that banks with high advances in their portfolio are more capable to generate value for them. The investigation of Aghababaei, Ataei, and Azizkhani (2013) in Tehran stock exchange found that Capital adequacy, the ratio of doubtful debts storage to the total loan (as credit risk variables) represent significant negative effect to shareholder value. Further supported by Kodithuwakku (2014), non-performing loans and provisions have an adverse impact on the profitability of Sri Lankan commercial banks. Abewardhana (2015) concluded that credit risk management has a significant impact on the profitability of commercial banks in Sri Lanka. Heydari and Abdoli (2015) realized a negative relationship of loss reserve on loans and past due credits with banks' performance. Gunathilaka (2015) concluded that all the measures of credit risk management used in the study are highly significant predictors of the financial performance of finance companies in Sri Lanka. Agusman, Monroe, Gasbarro, and Zumwalt (2009) concluded that reserves-to-gross-loans ratio has a negative and significant influence on bank stock returns. Findings of Perera and Morawakage, (2016) reveal that credit risk management has a significant effect on shareholder value in listed commercial banks in Sri Lanka and among the three credit risk management indicators; Non-Performing Loan Ratio (NPLR) has the most significant effect on the return on shares.

2.4 Solvency risk and shareholder value

Solvency refers to an enterprise's capacity to meet its long-term financial commitments. Systemic banking system solvency risk is driven by the correlated defaults of many borrowers, other market risks, and inter-bank defaults (Barnhill & Schumacher, 2011). Solvency risk is particularly important in the banking business, since the default in repayments lead banks towards bankruptcy.

Nethra and Kushalappa (2015) assessed the impact of financial solvency on stock returns.They proved that the companies with sound financial position could perform better in the stock market than the stocks of financially weak companies. According to the results found in the literature (for example Altunbas, Liu, Molyneux, & Seth, 2000; Mester, 1996, Zhang,Jiang, Qu,& Wang, 2013), capital risk has a negative impact on the value created for shareholders. The negative impact of capital risk on shareholder value indicates that banks with low capital risk performed better. Banks that are highly capitalized have relatively lower value created for shareholders.

2.5 Bank income diversification and shareholder value

Diversification is a technique that reduces risk by allocating investments among various financial instruments, industries and other categories. The Portfolio theory argues that unsystematic risk can be eliminated by going through a diversified portfolio of asset investment. Traditionally, banks involve in accepting deposits and making loans. Greater competition has diminished the cost advantage banks have had in acquiring funds and has undercut their position in loan markets. Non-interest income is a bank and creditor income derived primarily from fees including deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges, inactivity fees, check and deposit slip fees and so on. The conventional view of fee income in banking is that banks offset lost margin income via increased fee income (Williams & Prather 2010).

According to Stiroh (2004), increasing non-interest income on commercial banks in the USA can reduce the volatility of a bank’s profit, because of two factors: (1) Non-interest income has less correlation with the whole business than the traditional interest income; and (2) The expanded product line and cross-selling opportunities related to the growth of non-interest income benefits a bank’s revenue portfolio. Kohler(2013) found a significant impact from non-interest income on bank income structure. Accordingly,Teimet, Ochieng, and Away (2011), Amediku (2012),Ismail, Hanif, Choudhary, and Nisar(2015) and Wijethilaka (2015) found a positive relationship between non-interest income and bank performance considering their investigations. The opposite findings were shown by Lup (2015) that bank income diversification reduces the bank performances both in Kenya and Islamic banking respectively. Morover, Mercieca, Schaeck, and Wolfe (2007) found no direct diversification benefits within and across business lines and an inverse association between non-interest income and bank performance. Craigwell and Maxwell (2006) found that increases in non-interest income are linked to greater bank profitability, but also to higher earnings volatility in Barbados banking system. Further, Supported by Gamra and Plihon (2011) that diversification gains are more than offset by the cost of increased exposure to the non-interest income, specifically by the trading income volatility. Dempsey, Edirisuriya, and Gunasekarage (2013) found that income diversification has a significant positive association with the market to book value and a significant negative association with return volatility.

Nguyen, Skully, and Perera (2012) concluded that banks with greater market power (in both loan and deposit markets) focus more on interest income generating activities and thus earn less non-interest income. They also found that market power increases stability as banks diversify their income sources in both interests- and non-interest generating activities.
Hence the mix results were obtained by various researchers on bank income diversification as value adding or non-value adding activity.

3. Theoretical framework

Frank Donaldson Brown (1885 – 1965) who introduced DuPont analysis decomposed the ROA calculation into a product of the sales turnover ratio and the profit margin ratio (Marek, 2009). Du Pont analysis is highlighting the company's performance in three major areas: profitability, turnover, and leverage. This model is broadly used now a day by almost all industries and acts as the basic model whereby a detailed analysis of the return on equity and the factors that affect it, is made possible (Kalluci,2011).

DuPont analysis decomposes the ROE calculation in three stages. The calculation of ROE in basically views as follows.

$$ROE = \frac{Net\ Income}{Shareholder\ Equity}$$

In the first stage, the return on equity (ROE) breaks down into two elements, i.e. the return on assets (ROA) and financial leverage (or the so-called equity multiplier - EM).

$$ROE = ROA \times EM$$

Where:
ROA = Net Income/ Total Assets. It measures bank's profit per dollar of assets. Total Asset Turnover (ROA) is a measure the efficiency of using assets to generate sales, therefore, higher the ratio, higher the efficiency.
EM = Total Assets/Total Equity. The equity multiplier is a measure of leverage. A higher equity multiplier ratio shows that an institution is relying more heavily on debt financing to obtain funds.
The second stage of ROE decomposition consists of breaking down ROA into two other components, respectively profit margin (PM) and asset utilization (AU):

$$ROA = PM \times AU$$

PM = Net income / Total Revenue. It reflects profits per dollar of sales.
AU = Total Revenue / Total Assets. It expresses sales per dollar of assets.

At the third stage, some new ratios are created, starting from the components of the numerator or the denominator of the indicators generated in the previous stages and adapted to the specific characteristics of each industry.

As quoted in Kalluci (2011), Cole was the first who adapted and applied the DuPont model for banks. Therefore in the second stage, Du Pont formula for banking institution can be decomposed as follows.

$$ROE = ROA \times EM \quad (01)$$

Where:
ROA = Return on Assets
EM = Equity Multiplier

$$ROE = \frac{Profit\ After\ Tax}{Total\ Assets} \times \frac{Total\ Assets}{Equity} \qquad (02)$$

The above formula could also be expanded into several components based on the composition of the net income of the respective industry. The modified version of DuPont financial ratio analysis is used by Kirikal, Sorg, and Vensel (2011) to investigate the Estonian banking sector performance. Almazari (2012) and Georgios and Georgios (2011) estimated banks ROE to measure bank performance using DuPont model. Sensarma and Jayadev (2009) had developed a framework to identify the four risk management variables by expanding basic ROE into four components using the composition of profit after tax of commercial bank in India. And Fathi et al.(2012) and Saeidi and Kamali(2016) used this expanded framework to identify the same risk management variables with respect to Iranian banks.
According to the bank's income statement composition, the profit after tax of bank income statement mainly comprises of three components as interest income, noninterest income, and provisions for loan losses.Therefore based on such argument Sensarma and Jayadev (2009) expanded bank ROA as follows;

$$ROA = \frac{II - IE}{TA} + \frac{NONII - NONIE}{TA} - \frac{PROV}{TA} \qquad (03)$$

Where:
II =Interest Income, IE=Interest Expense, TA=Total Assets, NONII=Non Interest Income, NONIE= Non Interest Expense, PROV = Provision for Loan Losses
Accordingly ROA can be rewrite as:

$$ROA = NETIM + NNIM - PROV \qquad (04)$$

Where:
NETIM=Net Interest Margin, NNIM=Net Non-interest Margin and PROV=Loan Losses to Total Assets
Substituting equation (04) in to (01), ROE can be represented as:

$$ROE = (NETIM + NNIM - PROV) \times EM \qquad (05)$$

Equation (05) shows that the banks can achieve their purpose of maximizing stockholders’ wealth through maximizing NETIM, NNIM, and EM and minimizing PROV.

Finally, Following theoretical framework was developed by Sensarma and Jayadev (2009) and followed by Fathi et al. (2012) and Saeidi and Kamali (2016) to identify four risk management capabilities.This study also used the following framework (see figure 3.1) to identify four basic risk management capabilities in terms of interest rate risk management, bank income diversification,credit risk management and solvency risk management.

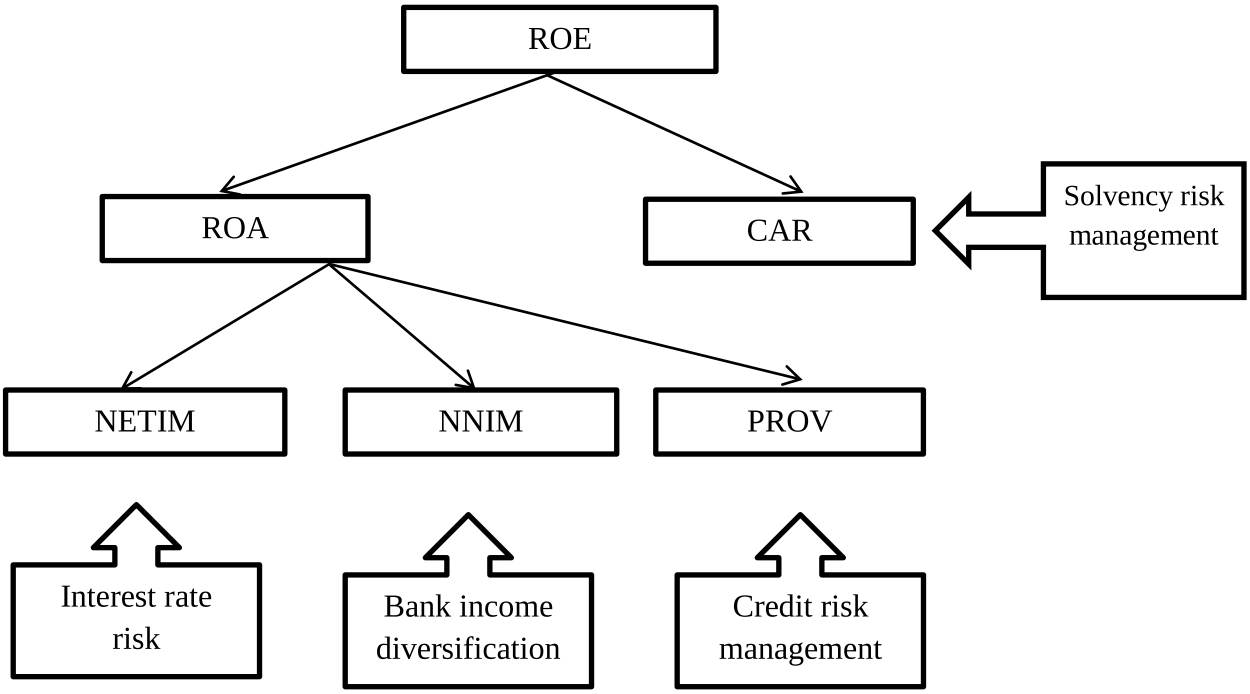

Figure 3.1: Profitability decomposition into risk management Variables
Source: Sensarma and Jayadev (2009)

This study also used above framework (see figure 3.1) to identify four risk management variables of Sri Lankan listed banks and subsequently to investigate the relationship between bank risk management capability and stock returns. The theoretical justification for the operationalization of independent and dependent variables is discussed in the methodology section.

4. Research methodology

4.1 Data and sample

Eight(08) listed commercial banks which are listed in Colombo Stock Exchange were selected out of ten (10) listed commercial banks as the sample and this data was collected for the period from 2006 to 2018. Two (02) listed commercial banks were eliminated due to unavailability of data for the sample period. Listed licensed specialized banks (LSB) and development banks were excluded from the sample since there are a regulatory mismatches among them and licensed commercial banks. And also state owned commercial banks were not considered since they are not listed in the CSE. The study used secondary sources of data from published bank annual reports and from CSE data depositary of 2018.

4.2 Operationalization of variables

Operationalization of variables provides the identification of independent, dependent and control variables, justification for variables and measurement of variables.

Interest rate risk management (NETIM)

In broad terms, interest rate risk is the risk that changes in the market interest rates impact on the profitability of economic value of the bank (Sironi& Resti, 2007). Bank earns income from assets and paid interest for liabilities which are having different maturities. The changes in the interest rate effect negatively or positively to net interest income based on the gap position of the bank.

Asset and Liability management approach suggests that banks which are asset sensitive (positive gap) have the ability to derive the advantage of increasing interest rate and banks which are liability sensitive may acquire losses in increasing interest rate. Banks try to maintain positive or negative gap position as responding to the forecasted change in the interest rate using balance sheet adjustments or off-balance sheet adjustments.Thus banks attempt to mitigate the negative impact of interest rate and try to maximize the advantage of the increasing interest rate. Efficient management of falling interest rates, reduce the possibility of decreasing interest income and efficient management of increasing interest rates increases the interest income. Hence the net interest income represents the bank's attempt towards the successful interest rate risk management.

Therefore net interest margin (Net Interest Income/Total Assets) shows the interest rate risk management capability of the bank. Thus, NETIM has been taken to measure the interest rate risk management capability of the bank in accordance with Sensarma and Jayadev (2009) Fathi et al. (2012), Doyran (2013) and Saeidi and Kamali (2016). When deriving NETIM the study considered all kinds of interest income from the income sources including investment in securities and derivatives contracts (off-balance sheet products) since those are exposed to interest rate risk. The study estimated NETIM as follows:

$$NETIM = \frac{Net\ Interest\ Income}{Average\ Total\ Assets}$$

The net interest income is the figure stated in the income statement as the difference between interest income and interest expense and the average total asset was estimated by considering both year beginning and year ending total assets in the blanace sheet.

Credit risk management (PROV)

Credit risk is the possibility that an unexpected change in counterparty's creditworthiness may generate unexpected change in the market value of the associated credit exposure (Sironi& Resti,2007). Avoiding from credit risk by banks involves both in customer perspective and bank portfolio perspective.

Banks evaluate their credit risk by analyzing the historical loss rate, forecasting future expected loss rate and preparing for future losses by making loan loss provisioning. On-balance sheet strategies for managing credit risk include increasing provisions for all anticipated loan losses.

Even though the loan loss provisions reduce the bank profitability the amount of provisions shows the ability of the banks in preparing for future loan losses. Therefore provision as percentage of total assets (Provisions/Total Assets) shows the credit risk management capability of banks, accordance with Sensarma and Jayadev (2009), Agusman et al. (2009), Fathi at al. (2012), Aghababaei et al.(2013),Heydari and Abdoli (2015) and Saeidi and Kamali (2016).

Accordingly, PROV (loan loss provision to total asset ratio) is considered as a proxy of credit risk management capability which measured as follows.

$$PROV = \frac{Total\ Loan\ Provisions}{Average\ Total\ Assets}$$

The provisions are the figure which is stated in the income statement as the loan loss provisions and the average total assets was estimated by considering both year beginning and year ending total assets in the balance sheet.

Solvency/capital risk management (CAR)

Solvency refers to an enterprise's capacity to meet its long-term financial commitments. Capital to asset ratio (reciprocal of EM) indicates the protection against the unexpected losses and also implicitly protect the depositor's confidence that the proportion of the bank’s asset that is represented by shareholder’s equity. But it decreases shareholder wealth by reducing the ROE. Therefore in duPont analysis takes the reciprocal of capital to asset ratio which is called equity multiplier (EM) as an increasing function of ROE. Accordingly, increasing EM may increase ROE and it shows lower capital to assets ratio which indicates higher solvency risk. It is argued that stockholders prefer low capital risk, in other words, low EM with an open view for the sustainability of dividend distribution by the bank (Anderson, 2003). Thus, the argument in the study is that shareholders prefer continuous survival of the bank at a minimum solvency risk in order to get continuous profit distribution. Therefore reciprocal of the EM which means capital adequacy ratio (CAR) shows the banks attempts towards the mitigation of solvency risk.

Furthermore, in the literature Fathi et al. (2012), Olalekan and Adeyinka (2013), Saeidi and Kamali (2016) used capital to asset ratio as a measurement for capital/solvency risk.’Sensarma and Jayadev (2009) measured the capital risk using regulatory capital ratios in the Indian banking system. Thus based on the above litratures, a study has taken the reciprocal of EM as capital adequacy ratios to measure the solvency risk management capability. The impact of solvency risk management capablity was measured using reciprocal of EM (capital to assets ratio) using following formula.

$$CAR = \frac{Total\ Equity}{Average\ Total\ Assets}$$

The total equity is the figure which is stated in the balane sheet as total equity and the average total assets were estimated by considering both year beginning and year ending total assets in the blanacesheet.

Bank income diversification/natural hedging strategy (NNIM)

Portfolio theory argues that individual investor can avoid unsystematic risk (diversifiable risk) by investing with a diversified portfolio of asset which relevant to various industries. In generally diversification of income means the expanding income bases into the variety of sources which has contradictory patterns of income generation.

Traditionally banks involve with generating net interest income through accepting deposits and making loans. Non-interest income is a bank and creditor income derived primarily from fees including deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges, inactivity fees, check and deposit slip fees, and so on. Kohler (2013) stated that banks that generate the largest part of their income from interest may become more stable if they increase their non-interest income share as this allows them to better diversify their income structure and to offset declining interest margins. Therefore non-interest income can be considered as an income source which avoids the risk.

Hence the argument is banks can reduce overall risk by diversifying income sources from interest income generating sources into non-interest income generating bases. Thus, the amount of non-interest income shows the capability of a bank to generate income avoiding from risk.

When considering the literature Kirikal, Sorg and Vensel (2011) considered the non-interest income to total asset ratio as an increasing function of ROA and named as burden ratio for their analysis. Sensarma and Jayadev (2009) and Fathi et al. (2012), Sufian and Shah Habibullah (2014),and Saeidi and Kamali (2016) also used the noninterest income to total assets ratio (Net Noninterest Income/Total Assets) to represent the successfulness of the natural hedging strategy/ bank income diversification of banks. Based on the argument that income diversification (income from other sources) as a risk management strategy, the study also used the amount of non-interest income to represent the bank attempt towards the generating income avoiding from risk .The non-interest income considered in the study is the income from sources that generate income other than the interest income (i.e. deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges, inactivity fees, check and deposit slip fees so on). Basically the fees, commission income and other income.

Therefore, the study used NNIM (Net Noninterest Income/Total Assets) as a proxy to represent the successfulness of natural hedging stratergy.

$$NNIM = \frac{Net\ non\ Interest\ Income}{Average\ Total\ Assets}$$

The net non-interest income has been estimated by taking the sum of all the income except interest income minus expenses relating to other income bases and the average total assets were estimated by considering both year beginning and year ending total assets in the balance sheet.

Market return (Rm)

In simply the market return is the return on the market portfolio. CAPM introduced by Sharpe (1964) and Lintner (1965) and market model introduced by Fama (1973) argued that return on any stock is sensitive to the return on market portfolio under the sensitiveness of the beta coefficient of a particular company. The study also considered the market return as an independent variable which theoretically effects to the return of any stock. In the market model, total market index return is used when explaining the relationship between market return and individual stock returns. However, banking industry is a highly regulated industry which differ from other industries.Therefore,total market index return (ASPI) may not be suitable when estimating market model for banking industry. Therefore geometric mean of the monthly average BFI (Banking finance and insurance) sector return was employed in order to represent the annual market return when estimating market model for banks.

Bank stock return (R_{it})

The main objective of a profit-seeking organization is to maximize shareholder wealth which is measured using various measures. From the shareholder perspective, shareholders expect a continuous increase in share price which is measured by stock returns. As per the signaling hypothesis, profit distribution (good news) provides positive signals which leads to an increase in the share price and if the market is efficient in semi-strong form, the price capture the dividend value.Therefore, the log retun of annual bank stock prices was used to estimate the return of stocks using following formula according to Ahmad (2011) and O'Connor and Keane (2011).

$$R_{it} = Ln(\frac{P_t}{P_{t-1}})$$

Where:
R_{it} = Annual return of stock i at time t
P t = Price of stock at time *t*
P t-1=Price of stock at time *t-1*

Control varible (TA)

In addition to risk management varibles identified in the analysis, firm size is employed as a control variable in the model since risk management capability may differ from large banks to small banks.Therefore, the natural logarithm of average total assets of banks is utilized to represent size of the bank. Fama and French (1992) documented significant relationship between firm size and stock returns of non financial firms. Later Barber and Lyon (1997) investigated the relationship between firm size and stock returns for financial firms and conclude that relationship between firm size and stock returns of financial firms are also similar to non financial firm. In previous studies in the literature, Kosmidou(2008),Floros and Tan (2012 a,b) and Sufian and Shah Habibullah(2014) used firm size measured by total assets as a determinants of bank performance.Craig and Diga (1998) utilized total assets as a proxy for firm size for their analysis.

4.3 Conceptual framework

Based on the theoretical framework explain in figure 3.1, the following the conceptual framework is developed to ascertain the relationship between independent variables and dependent variable.

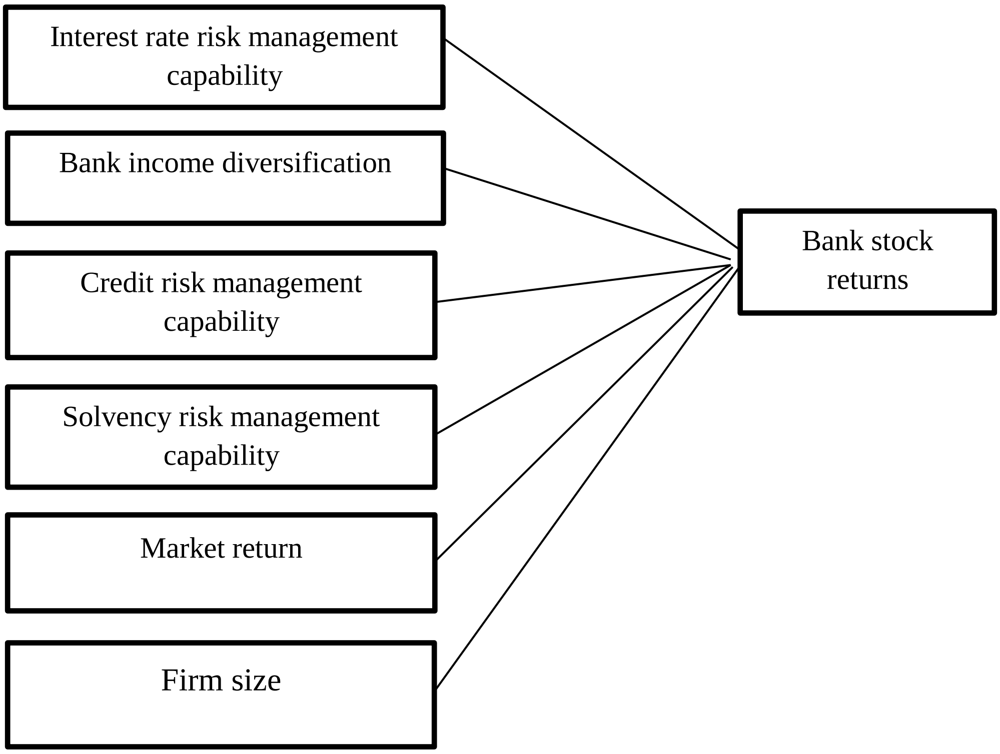

Figure 4.1: Conceptual Framework
Source: Author

Figure 4.1 shows the relationship between four risk management variables of interest rate risk management capability, bank income diversification, credit risk management capability and solvency risk management capability and bank stock returns. The market return is considered as an independent variable since the study utilizes the market model to ascertain the relationship between independent and dependent variables. One control variable of firm size is used to increase the explanatory power of the model.

4.4 Data Analysis

To examine the sensitivity of bank risk management capabilities on bank stock returns, the standard market model is used. In addition, descriptive statistics which provides a simple summary about the sample were used to describe the basic features of the data in the study.

Market Model

Fama (1973) introduced a model called the market model, on the argument that the market model is more reliable in the statistical sense than CAPM. In the literature Flannery and James (1984),Choi et al. (1992),Choi and Elyasiani (1996), Atindéhou et al.(2001), Sensarma and Jayadev (2009) and many researchers used this Market model to assess the relationship between stock returns and independent variables used in their studies other than market return as predictors of stock returns. This study also used the market model to analyze the impact of risk management variables on stock returns. Following multiple regession model was estimated to find the relationship between risk management variables and bank stock returns.

$$R_{it} = \alpha + \beta_1 R_{mt} + \beta_2 NETIM_{it} + \beta_3 NNIM_{it} + \beta_4 PROV_{it} + \beta_5 CAR_{it} + \beta_6 TA_{it} + \varepsilon_{it}$$

Where :

R it = annual return of stock *i* at time *t*

β_1 *Rmt* =market return (BFI) at time *t* and the corresponding coefficient of β1 implies the systematic risk which controls for the individual bank stock return

β_2 *NETIM it* = net interest income to total asset ratio of bank *i* at time *t* and the corresponding coefficient

β_3 *NNIM it* =net noninterest income to total asset ratio of bank *i* at time *t* and the corresponding coefficient

β_4*PROV it* = loan loss provision to total asset ratio of bank *i* at time *t* and the corresponding coefficient

β_5 *CAR it* =capital to asset ratioof bank *i* at time *t* and the corresponding coefficient

$\beta_6 TA_{it}$ = average total assets of bank *i* at time *t* and the corresponding coefficient (control variable)

ε_{it} = randm error term

Descriptive Statistics

Descriptive statistics are used to describe the basic features of the data in the study sample. Accordingly, the descriptive statistics of the four risk management variables considered for the study could be illustrated inTable 4.1 below.

Table 4.1: Descriptive statistics

Variable	Mean	Std.dev	Max.	Min.	Skewness	Kurtosis
$\mathbf{R_{it}}$	0.031446	0.438723	1.119890	-1.15541	0.338026	3.733571
$\mathbf{R_{mt}}$	-0.157021	0.564700	0.447427	-1.451428	-1.466244	3.826779
NETIM	0.044005	0.010600	0.084086	0.005161	-0.481505	6.771162
NNIM	0.019818	0.013461	0.137265	0.000887	6.492024	57.22791
PROV	0.004862	0.004004	0.015619	-0.002688	0.645666	2.963519
CAR	0.114555	0.100416	0.654116	0.045016	3.502420	15.91094
TA(log)	19.04623	1.039450	20.98831	16.04650	-0.458117	3.044469

Source: Author

As per the descriptive statistics, the mean stock return (R_{it}) of Sri Lankan listed banks is around 3.145 % which is significantly higher than R_{mt} (mean market return of banking finance and insurance sector return) of -15.7%.But the standard deviation of bank stock returns is 43.87 % which is slightly lesser than the standard deviation of the market return of 56.5%.

The mean value of capital adequacy ratio is (CAR)11.46% in Sri Lankan listed banks. However, the mean value of NETIM is 4.4% which is higher than the mean value of 1.98% of NNIM and it indicates that Sri Lankan banks are earning lesser income from non-interest income sources than interest income. The highest standard deviation is reported by TA and $R_{it}$and R_m reported second and third highest standard deviation respectively in the sample.The normal distribution of three varibles (R_m, NETIM and TA) shows negative Skewness which indicates that the tail of the left side of the distribution is longer.

Pearson correlation analysis

It measures the strength of a linear association between two variables separately. Following table 4.2 represents the correlation coefficient among the dependent variable and each independent variables in the study.

Table 4.2: Pearson correlation analysis

	R_{mt}	NETIM	NNIM	PROV	CA	TA
R_{it}	-0.646865	0.266651	0.196664	0.12984	0.013093	-0.07518
Prob.	0.0000*	0.0062**	0.0454**	0.1890	0.8950	0.4482

p<0.01,p<0.05*
Source: Author

According to the Pearson correlation analysis, there is a strong nagative (-0.646865) relationship between bank stock returns (R_{it}) and market return (R_{mt}) since the probability value is significant at a 99% confidence level. Indeed, market return movement is a significant predictor of bank stock returns , supporting to Sharp (1965), Linter (1965), Black, Jensen and Scholes (1972) and Fama and Macbeth (1973).

Other than the coefficients of R_{mt} *and* TA , all other varibles are positively associated with R_{it} in different degrees.The positive coefficients of NETIM and NNIM are significant under 5% levels of significance.Indeed,increasing interest rate risk management capability and bank income diversification course to increase the bank stock returns. However, the other coefficients are not significant under any level of significance.

According to the correlation analysis, the relationship between market return (R_m) and bank stcok returns (R_{it}) has the the stongest association of -64.79% compared to other varibles.

Panel regression analysis

The market model for the Sri Lankan listed banks is estimated using pooled regression model in order to assess the relationship between four risk management variables (including control variable i.e. firm size) on bank stock returns.Thus, Table 4.3 and Table 4.4 show the statistical findings of pooled regression models.The Table 4.3 illustrates the findings of the pooled regression which is estimated without considering the impact of control variable (firm size) and Table 4.4 illustartes the finding which consider the impact of control variable (firm size).

Table 4.3: Regression 01 - Pooled regression (without considering the control variable)

Variable	**Coefficient**	**Std.Error**	**t-statistic**	**Prob.**
C	-0.297164	0.142753	-2.081672	0.0400
$\boldsymbol{R_m}$	-0.483447	0.05984	-8.079035	0.0000*
NETIM	3.639588	3.376545	1.077903	0.2837
NNIM	5.376853	2.511129	2.141209	0.0347**
PROV	0.164109	8.420996	0.019488	0.9845
CAR	-0.129358	0.334821	-0.386349	0.7001
R-squared	0.458222			
Adjusted R-squared	0.43058			
S.E. of regression	0.33106			
F-statistic	16.57718			
Prob(F-statistic)	0.0000*			
Sum squared residual	10.74086			
Durbin-Watson stat	2.432943			

p<0.01,p<0.05*
Source: Author

Table 4.4: Regression 02 - Pooled regression (considering the control variable)

Variable	Coefficient	Std.Error	t-statistic	Prob.
C	-0.526059	0.679828	-0.773812	0.4409
$\boldsymbol{R_m}$	-0.484124	0.060143	-8.049586	0.0000*
NETIM	3.861639	3.452552	1.118488	0.2661
NNIM	5.55187	2.573164	2.157605	0.0334**
PROV	-0.12546	8.500792	-0.014759	0.9883
CAR	-0.13350	0.336552	-0.396671	0.6925
TA(log)	0.011416	0.033143	0.344445	0.7313
R-squared	0.458884			
Adjusted R-squared	0.425413			
S.E. of regression	0.332559			
F-statistic	13.70985			
Prob(F-statistic)	0.0000*			
Sum squared residual	10.72774			
Durbin-Watson stat	2.438456			

p<0.01,p<0.05*
Source: Author

Findings

When considering the individual variables' explanatory power, market return (R_{mt}) and bank income diversification (NNIM) are significant under conventional levels of significance in regression 01 and regression 02 (See Table 4.3 and Table 4.4). The negative coefficients of market return (-0.483447 and -0.484124 in regression 01 and regression 02 respectively) are highly significant under 1% levels of significance in both regressions than other independent variables. Findings are complying with Sensarma and Jayadev (2009), Fathi et al. (2012), and Saeidi and Kamali (2016). Thus, market return, (R_m) being a highly significant independent variable than other independent variables, supports to the systematic risk argument of Sharpe (1964), Linter (1965) and Fama (1973) that market return is a predictor of individual stock returns.

Income diversification (NNIM) which generates income by avoiding from risk as a natural hedging strategy also shows a significant variable to predict bank stock returns according to the results of regression 01 and regression 02 (see Table 4.3 and Table 4.4). In both models, NNIM shows a positive coefficient and it indicates that increasing NNIM leads to increase return for shareholders.

Further, banks which generate income from non-interest income sources would actively involve with bank income diversification and could be able to increase the return for shareholders. The findings of NNIM is contradictory to the results of Saeidi and Kamali (2016) for the banks listed in the Tehran Stock Exchange. Saeidi and Kamali (2016) found positive and insignificant relationships for NNIM with bank ROE. And the study findings on NNIM is also contradictory to the findings of Sensarma and Jayadev (2009) relating Indian listed banks where they found an insignificant impact. Furthermore findings complying with Teimet et al. (2011), Amediku (2012), Ismail et al. (2015) and Wijethilaka (2015) where they found a positive relationship between non-interest income and bank performance.

The positive relationship between NETIM and bank stock returns as per the findings of both regressions (see Table 01 and 02) are insignificant predictor of bank stock returns. But the result of interest rate risk management capability (NETIM) is contradictory with Fathi et al. (2012) where they found a positive and significant coefficient for NETIM with bank ROE. However, the findings are complying with Saeidi and Kamali (2016) and Sensarma and Jayadev (2009).

The finding of credit risk management capability (PROV) is differ in regression 01 and regression 02. PROV shows a positive coefficient in regression 01(see Table 4.3) and negative coefficient in regression 02 (see Table 4.4), but both relationships are insignificant. The positive relationship in regression 01(0.164109) implies that increasing provisions leads to decreases the credit risk management capability and finally increases the bank stock returns (i.e the argument in the study is increasing PROV course to decrease ROE, thereby decreases the credit risk management capability). Therefore,such finding is contradictory to the Dupont argument which provides the theoretical justifications for PROV as an independent variable in the study. However, result on PROV in regression 01 is conforming with Sensarma and Jayadev (2009) and Saeidi and Kamali (2016) where they also found positive coefficeints for PROV. According to the findings of regression 02 (see Table 4.4) the coefficient of PROV is negative (-0.12546), which implies that decreasing provisions course to increase credit risk management capability and ultimately to increase the bank stock returns complying with the DuPont argument. The coefficient of PROV become negative in regression 02 due to introduction of controlling variable of firm size (TA) to the model which leads to increase the model explanatory power and make the analysis more reliable.

The coeffient of solvency risk management capability measured by capital to assests ratios (CAR) in regression 01 and regression 02 are also insignificant. However, both regressions show negative coeffient values (-0.129358 and -0.13350 respectively in regression 01 and regression 02) for CAR. Indeed, increasing solvency risk management capability decreases the return for shareholders, supporting to the Dupont argument that the higher capital to assets ratio (lower equity multiplier) reduces ROE, thereby decreases the return for shareholders. However, Sensarma and Jayadev (2009) found positive significant coeffient between CAR and bank stock returns in Indian listed banks. Saeidi and Kamali (2016) also found positive significant coeffient between solvency risk management capability (CAR) and ROE.

According to the results of regression 02 which controlled for the firm size impact, the positive coefficient of TA (0.011416) is also an insignificant variable to predict bank stock returns. Such contradictory finding to Barber and Lyon (1997) may be due to use of small sample of 08 banks (due to unavailability of required date for the sample period). Moreover,the introduction of TA (firm size) as a control variable to the regression does not highly impact to the original results given in Table 4.3 ,regression 01. Indeed, none of the independent variables which were previously became insignificant in regression 01 become significant in regression 02. According to the findings of regression 01 and 02, market return (R_{mt}) and NNIM (bank income diversification) are the only variables which are having singnificant association with bank stock returns. However, the coefficient of PROV become negative in regression 02 which were explained in the previous paragraphs.

According to the findings of regression 01(see Table 4.3) and regression 02 (see Table), the p-value of F-statistics is significant under 1% levels of significance as complying with Sensarma and Jayadev (2009), Fathi et al. (2012) and Saeidi and Kamali (2016). Indeed, as a whole model, the combined explanatory power of all the independent variables on bank stock returns is highly significant in both regressions. Accordingly, market return (Rm),bank income diversification (NNIM), credit risk management capability (PROV), solvency risk management capabilities (CAR), interest rate risk management capability (NETIM) and firm size (TA) are collectively impact to bank stock returns.

5. Implications and conclusion

The objective of this study is to examine the impact of risk management capability of the bank on bank stock returns which measure the shareholder wealth. Four risk management capabilities of interest rate risk management (NETIM), bank income diversification (NNIM), credit risk management (PROV), and solvency risk management (CAR) are identified using standard DuPont analysis by decomposing ROE calculation.The study compounded mentioned risk management variables and stock return for eight listed commercial banks for the period from 2006 to 2018.

Two separate regressions were estimated to analyse the impact of control variable of firm size (TA) on the overall model.The regression 01 was estimated without considering the firm size impact and regression 02 was estimated considering the impact of firm size.

According to the findings of the study, market return (R_m) and bank income diversification (NNIM) were significant predictors of bank stock returns in regression 01 and regression 02. The impact of market return on bank stock retuns was highly significant supporting to the systematic risk argument of Sharpe and Linter (1965) and Fama (1973). Furthermore, bank stock returns are negatively related to the market return and bank income diversification is positively related to the bank stock returns.The impacts of interest rate risk management capability (NETIM), credit risk management capability (PROV) and solvency risk management capability (CAR) are not significant to determine bank stock returns.

The introduction of firm size into the regression 02 did not make significant impact to the results under the regression 02. However the the positive coefficient of PROV in regreesion 01 became a negative coefficient in regression 02. The negative coeffient value of PROV in regression 02 supporting to the theoretical argument of DuPont analysis that increasing provisions decreases the credit risk management capability, thereby decreasing the return for shareholders. The positive relationship between firm size and stock returns was also insignificant.

This study contributes to the literature of the Sri Lankan banking industry by employing standard DuPont analysis to banks financial statements. In addition, this provides several implications to bank managers and shareholders.

Bank managers can employ effective strategies to increase non-interest income, hence it contributes towards generating a higher return for the shareholders. Expanding the income generating sources such as fees, insufficient funds (NSF) fees, annual fees, monthly account service charges, inactivity fees, check and deposit slip fees and other income other interest income will generate higher return for shareholders. The study suggests to shareholders to purchase the stocks of banks which have increased non-interest income and to concentrate on the market index changes in order to increase their returns.

The future researchers can extend the study by identifying other risk management capabilities using DuPont analysis. Furthermore, researchers can use an alternative technique to measure the risk management capabilities of banks other than using ratio analysis. The major drawback of the study is considering only eight listed commercial banks since the unavailability of data required fot the study.

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Modeling and forecasting USD/LKR exchange rate volatility

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Abstract

Modeling exchange rate volatility is important to economic environment of the country as the International trade and investment decisions mostly depend on exchange rate. These decisions are found to be more difficult due to highly volatile exchange rate. This study empirically investigated the exchange rate volatility in Sri Lanka. The main objective of this study is to develop a model to investigate volatility characteristics of exchange rate on USD/LKR using the monthly average exchange rate return series over the period of January 2010 to May 2018. Given that there are ARCH effects on exchange rate return, researchers estimated both ARCH (1) and GARCH(1,1) for capture symmetry effect and also EGARCH (1,1) applied to capture the asymmetry and leverage effect on mean equation. These models were estimated with maximum likelihood method using the distributions namely, normal, and student-t and generalized error distribution. Thus, the study found evidence that monthly average returns are characterized by the mentioned models and the results showed that the volatility is quite persistent for USD/LKR return. The results showed that ARMA (1, 0)-ARCH (1) model with normal distribution is the best in order to describe the exchange rate return and also captures ARCH effect, serial correlation, time varying variance, peakedness and fat tails. GARCH and EGARCH estimation results suggested the absence of GARCH effect and the leverage effect in the exchange rate volatility respectively. Finally, both the dynamic and static procedures are used for the forecasting of ARMA (1, 0)-ARCH (1) model and the static procedure provided better results on the forecasting rather than the dynamic forecasting. In case, it will be advisable that the peculiarity of the economy is taken seriously into consideration when forecast results are used for policy decision making.

Keywords: Exchange rate Volatility; Forecasting; GARCH Models; Stylized Facts

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1. Background

The exchange rate is "the amount of a currency that one needs in order to buy one unit of another currency, or it is the amount of a currency that one receives when selling one unit of another currency" (Sercu, 2009 as cited by Fang & Lu, 2011, p. 69). Exchange rate volatility is a measure of the fluctuations in an exchange rate. It is also known as a measure of risk, which could be the input to a variety of economic decisions. Volatility provides an idea of how much the exchange rate can change within a given period (Abdalla, 2012; Ekanayake & Chatrna, 2010). It can be measured on an hourly, daily, weekly, monthly or annual basis.

Modeling exchange rate volatility is an important area in macroeconomic and finance. The exchange rate shows the country's international presence. International trade and investment decisions mostly depend on exchange rate and a highly volatile exchange rate cursed on international trade and investment decisions. A possible reason for this is the tendency that the exchange rate may increase the risk. Therefore, movements of exchange rate can have a significant impact on a particular country and trading partners. Identifying the characteristics of exchange rate is very important to balance the benefits and risks attached to the international trade and also the Sri Lankan business environment. According to Jayasuriya and Perera (2016) and Abdalla (2012), there have been sufficient studies on the moderating exchange rate in advanced countries; the studies based on emerging countries like Sri Lanka are limited to a few recent studies. To the best of researchers' knowledge, empirical research on the topic of volatility exchange rate is fragmented as there is no study that has compared the ability of different volatility models in the Unites states dollar/ Sri Lankan rupee (USD/LKR) in Sri Lanka. This called for more research in this area and the current study addresses this.

The researchers have been selected USD foreign currency unit out of other hard currencies for the present study. USD (symbol: $) is the official currency of the United States. USD is one of the major and popular currencies in the world. The USD rate is excessively important to various parties in international trade such as policy makers, investors, trade etc. The USD represents about 86% of all foreign exchange market transactions compared to other currencies as same as in Sri Lanka. The USD is also used as a measurement tool to evaluate other currencies and goods. The USD is used as the standard currency for most commodities, such as crude oil and precious metals (Jennifer, n.d.).

When Sri Lanka is considered, the United States is the largest export destination for Sri Lanka. For example, Export rate to the United States averagely grew by 6.85 percent (Central Bank of Sri Lanka [CBSL], 2017) during the last five years. The USD as pointed by CBSL is one of the major currencies in Sri Lanka. This is also used to measure effective exchange rate in Sri Lanka. The Effective exchange rate index is usually computed by using 24 currencies, which is determined on the basis of major trading partners of Sri Lanka. Also the USD is one of the most widely used currencies in international trade in Sri Lanka. Moreover, the USD exchange rate in Sri Lanka has been fluctuating during the last ten years. It suggests that the USD has higher volatility than other hard currencies. The researchers found that the exchange rate has been adjusting smoothly over last few years. Figure 1 indicates annual average changes of the USD rate against the LKR during the last 10 years. The positive and negative values indicate appreciation and depreciation of the LKR against the USD, respectively. As is shown in Figure 1, the LKR depreciated against the USD continuously, ignoring small appreciations over the last ten years.

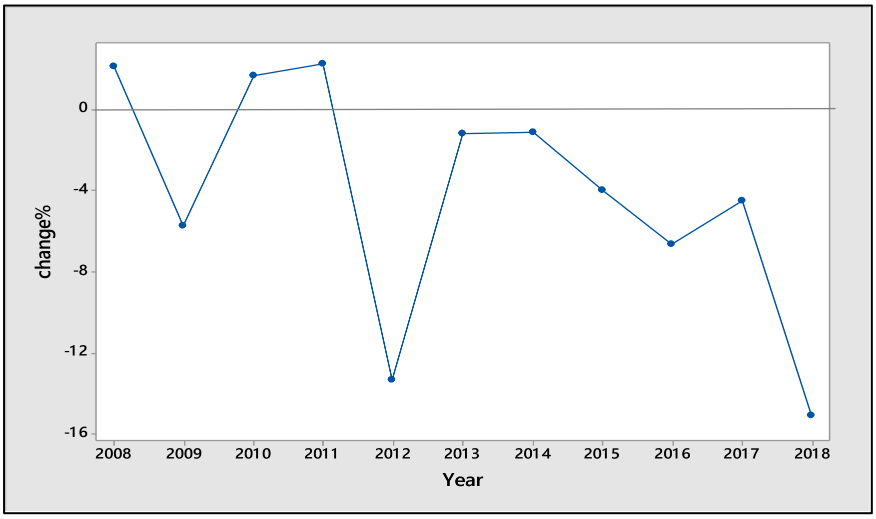

Figure 2: Changes of USD/LKR
Source: CBSL Annual Reports from 2008 – 2018

This suggests that the exchange rate is not a constant variable. All foreign transactions are affected with respect to the movements in the exchange rate. The depreciation of the exchange rate has a higher impact on respect to the Sri Lanka economy being dependent on imports. Fluctuations of the exchange rates will lead to instability and lack of confidence in the country's economy. Given this background, this study sought to answer the question; what are the characteristics of exchange rate volatility in Sri Lanka.

The exchange rate volatility is estimated, using ARCH model introduced by Engle, the generalized GARCH models develop by Bollerslev and Taylor and the exponential GARCH model to capture the leverage effects (Abdalla, 2012). The purpose of using these models are to estimate the conditional variance of time series design and these models capture heteroscedasticity and volatility clustering in financial data. The purpose of this study is to determine the stylized facts of exchange rate of Sri Lankan Rupee with its major currency - the LKR against to the USD. The main objective of this study is to develop a model to investigate volatility characteristics of exchange rate on USD/LKR using the monthly average returns of exchange rates over the period of January 2010 to May 2018. The volatility models applied in this study include symmetric models such as ARCH (1), GARCH (1, 1) and asymmetric model EGARCH (1, 1) with normal, student-t and generalized error distribution. The forecasting exchange rate volatility is also tested. In order to address the main objective, the following sub objectives are framed; (1) calculate monthly logarithmic returns of the exchange rate, (2) to identify Descriptive Statistics of Monthly Logarithmic Returns of the Exchange Rate and (3) to estimate dynamic and static forecast for exchange rate volatility for the period of June 2018 to May 2019 from best fittest model.

Sri Lanka experienced economic debacles such as ethnic violence, political changes, civil war and economic down fall during the last ten years (2008-2018). As a result of these events, exchange rate fluctuated in unusual way. For an example monthly average LKR value of USD increased from 107.65 rupee to 182.13 within 2008-2018 period of time. Researchers collected monthly data over the past ten years (2008-2018). However, Sri Lanka has faced civil war on 2009. Therefore, researchers attempted to eliminate the impact of war. Thus, they collected average monthly data from January 2010 until May 2018 for nine years and forecast for June 2018 to May 2019 for one year. The whole study is based on secondary data. The secondary source was Central Bank of Sri Lanka.

According to Herath (2005), the theories of the exchange rate might not be applicable to less developed countries like Sri Lanka where economy depends mostly on IMF or similar institutions, their monetary contributions and advices. Hence, researchers' aims were to do a similar test to Sri Lanka to identify the characteristics of exchange rate volatility in Sri Lanka. Results of this study would be helpful to observe the applicability and relevance of economic theories to practical situations in a less developed country like Sri Lanka.

Further, the researchers developed a model to determinate exchange rate volatility. This model helped us to recognize and forecast exchange rate volatility. It will help to parties who are sensitive in exchange rate fluctuations such as policy makers, investors and government to decrease exchange rate risks. The study also adds value to theory as it establishes the characteristics of exchange rate volatility in Sri Lanka. This study will also be informative to those who are interested in doing similar research in the field of exchange rate. Results of this study may be helpful to the researchers and the students who study about exchange rate.

The researchers have made a structure of the study as follows. Section 2 provides a brief review of stylized facts about exchange rate volatility and some related works and section 3 present the methodology and the overview of symmetric and asymmetric GARCH family models used the study. Section 4 summarizes the data analysis and presentation, while section 5 discusses the findings of the study. Finally section 6 concludes the study and its contribution.

2. Literature review

In this section researchers discuss stylish facts about the exchange rate volatility examining few studies in the area of volatility of exchange rates. Financial time series are known to exhibit certain characteristics and patterns which are crucial for correct model specification, estimation and forecasting (Abdalla, 2012; Epaphra, 2017). The most common characteristics can be explained as follows.

2.1. Stylized facts about volatility of exchange rates

Non-Normality distribution and fat tails

Deviations Stylized facts of financial returns suggest strong deviations from the normal distribution (Humala & Rodriguz cited by Epaphra, 2017). The statistic proposed by Jarque and Bera (JB test) provides a formal assessment for normality assumptions. The distribution of financial time series such as exchange rate return is compared with normal distribution, it can observed fatter tails. This observation is also referred to as excess kurtosis is positive. More over thick tailed distribution has a value of kurtosis that exceeds 3. This is called leptokurtosis (Abdalla, 2012; Epaphra, 2017).

Volatility clustering and persistence

Volatility clustering mean that tendency of large and small values in the log return tend to occur in clusters. More over the current level of volatility trends to be positively correlated with its level during the period. This phenomenon can be demonstrated in time series plot and stationary test (Brooks,2008 cited by Epaphra, 2017) and (Abdalla, 2012).

Leverage effects

The downward movements (depreciation) are always followed by higher volatility. These characteristics exhibited by percentage changes in financial data are termed leverage effects (Abdalla, 2012). According to Epaphra (2017), most previous studies showed that volatility is higher after negative shocks than after positive shocks of the same magnitude. If negative shocks increase, predictable volatility is more than positive shocks.

Long memory

There exists evidence of near unit root behavior of the conditional variance process called unit root or long memory process (Longmore, 2008 cited by Abdalla, 2012) and (Robinson 2004).

Regular events

The exchange rate volatility has effected by regular events such as holidays weekends. According to Abdalla (2012), most studies attribute this phenomenon to effects of information during weekends and holidays.

2.2 Empirical findings

Epaphra (2017), applied univariate nonlinear time series analysis to the daily Tanzanian Shilling / United States Doller (TZS/USD) exchange rate data spanning from January 4, 2009 to July 27, 2015 to examine the volatility of exchange rate in Tanzania. The paper concludes that the exchange rates volatility can be adequately modeled by the GARCH (1, 1) model. However, the fact that GARCH (1, 1) is symmetric, the results of an asymmetric model, EGARCH estimation suggest the presence of leverage effect in the exchange rate volatility. This result is consistent with Talwar & Bhat, (2018) who empirically investigated exchange rate volatility of India's currency by applying rolling symmetric and asymmetric GARCH models to the USD/INR and EUR/INR daily exchange rates for a period spanning April 1, 2006 through January 31, 2018. Results show that GARCH (1, 1) model with generalized error distribution is adequate to capture the mean and volatility process of USD/INR and EUR/INR exchange rate returns.

Omari, Mwita, and Gichuhi Waititu (2017) applied ARCH/GARCH in modeling exchange rate volatility of the USD/KES exchange rate using daily observations over the period starting 3rd January 2003 to 31st December 2015. The study performed the symmetric GARCH (1, 1) and GARCH-M models as well as the asymmetric EGARCH (1, 1), GJR-GARCH (1, 1) and APARCH (1, 1) models with distributions namely, normal, Student's t-distribution and Skewed Student's t-distribution. The results conclude that the AR (2) - APARCH (1, 1) model is superior in the estimating the volatility. Dritsaki, (2018) who developed and examined the characteristics of volatility of exchange rate on British pound/US dollar, using symmetric and asymmetric GARCH models found ARIMA (0, 0, 1)-EGARCH (1, 1) model with t-Student distribution is the best in order to describe exchange rate returns and also to capture the leverage effect. Finally, for the forecasting the static procedure provides better results on the forecasting rather than the dynamic.

Abdalla (2012) modeled the exchange rate volatility using the daily returns of exchange rates of nineteen Arab countries all against the USD over the period from 1st January 2000 to 19th November 2011. The empirical results showed that the conditional variance (volatility) is an explosive process for the ten of nineteen currencies, while it is quite persistent for seven currencies which are required to have a mean reverting variance process. Furthermore, the asymmetrical EGARCH (1, 1) results find evidence of leverage effects for all currencies - except for the Jordanian Dinar (JOD). Finally, the paper concluded that the exchange rates volatility can be adequately modelled by the class of GARCH models.

Ekanayake and Chatrna (2010), did a similar study in Sri Lanka. This study investigated the effects of exchange rate volatility on Sri Lankan exports to its major trading partners from quarterly data for the period of 1980 to 2007. In this study researchers used ARCH type model (GARCH) to generate a measure of exchange rate volatility. Exchange rate volatility was obtained using the estimated GARCH (1, 1) model base on autoregressive model of order 2 (AR (2)) of the first difference of the real exchange rate. The study obtained impact of exchange rate volatility differs between different categories of goods.

As described above in the literature review, most of the studies (both internationally and locally) intend to model exchange rate volatility only. The present study intended to model not only the exchange rate but also the characteristics of estimated exchange rate volatility. Also from the foregone review, researchers identified that in Sri Lankan studies the authors have done partial and comprehensive studies on exchange rate volatility. It means they have examined exchange volatility as a part of their studies. In other words, Partial studies used exchange rate volatility to achieve their main objective and they did not consider the behavior and the characteristics of exchange rate volatile. And also the present study used symmetric and asymmetric GARCH models with three distributions. To the best of researchers' knowledge, this kind of study has not been conducted yet in the Sri Lankan context.

This study is expected to provide knowledge on modeling exchange rate volatility in developing countries like Sri Lanka and it is also expected to contribute to policy making through developing a model which can be used to forecast exchange rate and thus, guide policy makers in formulating macroeconomic policies. The study applied both GARCH and the EGARCH models to capture both symmetry and asymmetry in volatility while there are some other studies on the volatility of exchange rate indices in the literature; scholars have not yet modeled exchange rate volatility in Sri Lanka using recent monthly average data. Hence this study attempted to fulfill that research gap and conducted a comprehensive study over the period 2010-2018 using monthly average returns of exchange rates of USD/LKR in Sri Lanka. This study set out to contribute to knowledge in this area using simple and convenient procedure that would enable useful and reliable conclusions.

3. Methodology

3.1. Data

The time series data are used in the current study. Monthly average return of exchange rate of USD/LKR is used to calculate exchange rate volatility. According to Dritsaki (2018), Omari et al. (2017), Epaphra (2017), Abdalla (2012), and Ekanayake and Chatrna (2010), the currency exchange rate was transformed in to monthly log returns using following return formula and the exchange rate volatility was obtained from monthly log return of exchange rate.

$$ex_r = 100 \times \log\left(\frac{E_t}{E_{t-1}}\right)$$

Where, ex_r is the monthly percentage return to the exchange rate and E_t and E_{t-1} denotes the exchange rate at the current day and previous day, respectively.

The Researchers considered data in the recent past from January 2010 to May 2019, a total of 113 observations. Researchers used data to estimate exchange rate volatility from January 2010 to May 2018 and another one year (June 2018 to May 2019) is used for forecasting. The study is based on secondary data. The secondary data resource is the central bank of Sri Lanka. Data was analyzed using e views 8.1.

3.2 Volatility modeling

This section discussed the competing ARCH and GARCH models used to investigate volatility characteristics in the current study. Volatility of an exchange rate, just like that of other financial assets, is usually calculated from the standard deviation of movements of exchange rates (Abdalla, 2012; Ekanayake & Chatrna, 2010). There are two distinct specifications of modeling GARCH family model, the first one for the conditional mean which describes the data as a function of other variables adding an error term. The other one for the conditional variance determines the development of error conditional variance from conditional mean as a function of the previous conditional variance of lagged error (Dritsaki, 2018).

Talwar and Bhat (2018), Dritsaki (2018), Omari et al. (2017), Epaphra (2017), Abdalla (2012), Ekanayake and Chatrna (2010) and Lee- Lee and Hui- Boon (2007), also used following ARCH/GARCH methodology for estimate exchange rate volatility in their studies. According to them ARCH/ GARCH models provides a reasonably good model for analyzing financial time series and estimating conditional volatility. The ARCH/GARCH model is also used in this study to investigate the volatility of exchange rate return series. The exciting models of volatility can be divided in to two main categories, symmetric and asymmetric models (Omari et al., 2017). Researchers explained both basis models used in present study as follows.

Autoregressive Conditional Heteroscedasticity (ARCH) model

According to Dritsaki (2018), Epaphra (2017), and Abdalla (2012), Engle (1982) developed the symmetric ARCH model for testing the volatility of financial series. ARCH model is an autoregressive (AR) process and is written as follows,

$$\varepsilon_t = z_t \sigma_t$$

$$\sigma_t^2 = \omega + \sum_{j=1}^{q} \alpha_j \, \varepsilon_{t-1}^2$$

Where, z_t is an independently and identically distributed.it means process with $E(z_t) = 0$ and$Var(z_t) = 1$. ε_t is not serial correlated and has a zero mean and the conditional variance is σ_t^2 assumed and also, because of variance is positive for all t, then these relations must be valid, $\omega > 0$ and $\alpha_j \geq 0$. Dritsaki (2018), mentioned ARCH model can describe volatility since the conditional variance of ε_t is an increasing function of ε_{t-1}^2.Moreover, if $\varepsilon_{t-1}$is large in absolute value, then also can expect σ_t^2 and ε_t to give large values.

The Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model

Bollerslev (1986) enhanced the ARCH model in to symmetric GARCH that allows the errors of variance to depend on its own lags and lags of the squared errors (Dritsaki, 2018). Talwar and Bhat (2018), Omari et al. (2017), and Abdalla (2012), mentioned GARCH model has only three parameters that allows for an infinite number of squared errors to influence the conditional volatility. The conditional variance determined through GARCH is a weighted average of past squared residuals. The weight decline gradually but never reach zero. The GARCH (p, q) model can be written as follows.

$$\sigma_t^2 = \omega + \sum_{j=1}^{q} \alpha_j \, \varepsilon_{t-1}^2 + \sum_{i=1}^{p} \beta_i \, \sigma_{t-1}^2$$

Where p is the number of lagged σ_t^2 conditional volatility and q is the number of lagged ε^2 terms. ω is the standard notation for GARCH constant. α is the GARCH error coefficient. β is the GARCH coefficient. The assumptions of ARCH is also related to GARCH model too (Abdalla, 2012; Dritsaki, 2018; Omari et al., 2017).

The Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH) model

The asymmetric EGARCH model developed by Nelson for testing the asymmetry of volatility. EGARCH model can expressed as follows.

$$log\sigma_t^2 = \omega + \sum_{i=1}^{p} \alpha_i \left|\frac{\varepsilon_{t-1}}{\sigma_{t-1}}\right| + \sum_{j=1}^{q} \beta_j \, log\sigma_{t-j}^2 + \sum_{k=1}^{r} \gamma \frac{\varepsilon_{t-k}}{\sigma_{t-k}}$$

Where σ_t^2 is the conditional variance and, β_j , α_i and γ_k are parameters to be estimated. The parameter β_j should be positive and less than 1 in order to have stationary. γ_k Parameter is and indicator of leverage effect meaning asymmetry and must be negative and statistically significant (Abdalla, 2012; Dritsaki, 2018; Omari et al., 2017; Talwar & Bhat, 2018).

3.3 Measurement of exchange rate volatility

Conditional mean equation

According to Omari et al.(2017) and Abdalla (2012) conditional mean equation which might be an AR process, moving average (MA) process or a combination of AR and MA processes. The Autocorrelation Function (ACF) and Partial Autocorrelation (PACF) are used to determine the order of ARMA (p, q) models. For an example ARMA (1, 1) process the conditional mean equation can write as follows.

$$\mathrm{Y_t} = \sum_{i=1}^{p} \alpha_i \, Y_{t-i} + \varepsilon_t + \sum_{j=1}^{q} \beta_j \, \varepsilon_{t-j}$$

Where, $\mathrm{Y_t}$ is a time series being modeled. In this study, the mean equation is modified to include appropriate AR term to control for autocorrelation in the data. After obtaining conditional mean equation the next steps were to test following tests.

3.4 Diagnostic checking of the volatility model

Most important issue before applying the ARCH/GARCH methodology is to first examine the residuals of the exchange rate returns series for evidence of heteroscedasticity (Abdalla, 2012). To test for heteroscedasticity, the ARCH

LM test is applied and also used the squared residuals of autocorrelation function. To developed ARCH/GARCH model there should be ARCH effect of conditional mean equation (Talwar & Bhat, 2018). Researchers used two methods to test autocorrelation which were Q statistics and serial correlation test. The existence of serial correlation among residuals is a necessary pre requisite for apply ARCH/GARCH and normality test is employed with Jarque and Bera test.

The study has applied three information criteria namely Akaike information criteria (AIC), Schwarz information criteria (SC) and Hannan-Quinn information criteria (HQC) for model comparison. The model which gives lowest value of these criteria was selected. As well as Lag length is usually determined using above three main methods, which are considered to be the classical procedures for determining the lag length. The lag is lapse of time (Epaphra, 2017).

Many economic data are non-stationary data. Therefore researchers have to convert those non stationary data in to stationary data (Rajakaruna, 2017). A series is said to be stationary if the mean and auto covariance's of the series do not depend on time (Venkatesan & Ponnamma, 2017). The unit root test is carried out to test whether the series are stationary or not. The Augmented Dickey-Fuller Test (ADF) and Phillips-Perron test (PP) method were conducted to check the stationary and random walk of the variables. ADF and PP tests can be specified with intercept, and also intercept with trend. Hence study is used these two specification.

3.5 Forecast evaluation of out of sample

Static and dynamic forecasting

GARCH models are used for forecasting the variance of return using dynamic and static procedure. The definition according to E-Views of dynamic forecasting is that there have to be calculated forecasts for the periods after the first period in the sample. In other words, dynamic forecasting is using the previously forecasted values of the lagged left hand variable. Therefore a static forecasting uses actual rather than forecasted value for the lagged variable and which can be done only there are actual data available (Xie, 2008; Klose & Pircher, 2004).

The best forecasting value is evaluated by mean square error. Researchers used the mean absolute error (MAE), the root mean square error (RMSE) and the mean absolute percentage error (MAPE). The Dynamic and static forecast accuracy evaluate by Theil's inequality index. If Theil's inequality index is equal to 0, then actual values of series are equal with the predicted (Dritsaki, (2018). Figure 2 presents the conceptual frame work of building volatility model as follows.

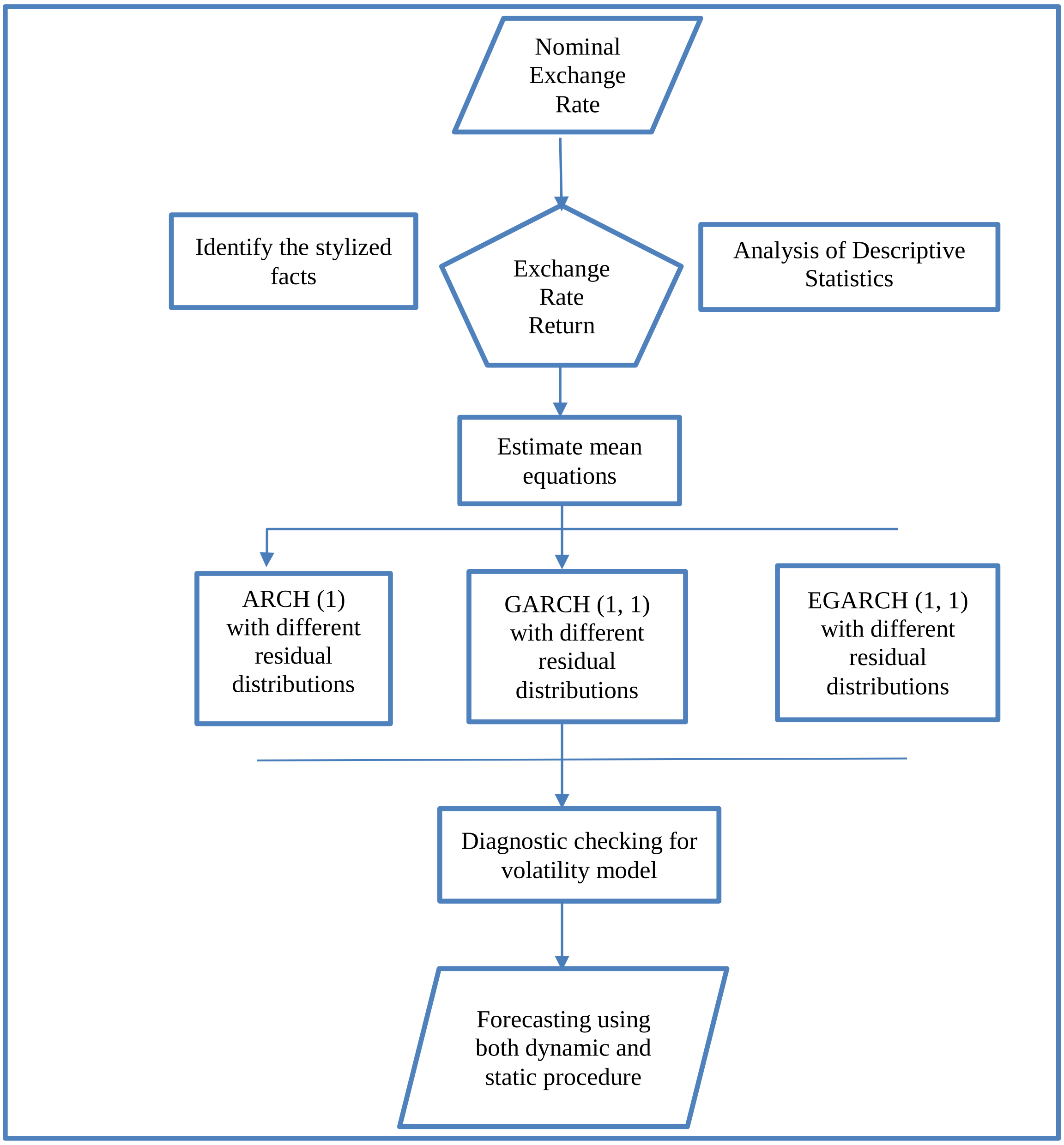

Figure 2: The Conceptual framework of building volatility model
Source: Created By Researchers

4. Data analysis and presentation

4.1 Descriptive statistics

Figure 3 shows the plot of monthly log returns of exchange rate. According to figure the volatility occurs in clusters. This plot shows a clustering of returns volatility around both the starting and end points.

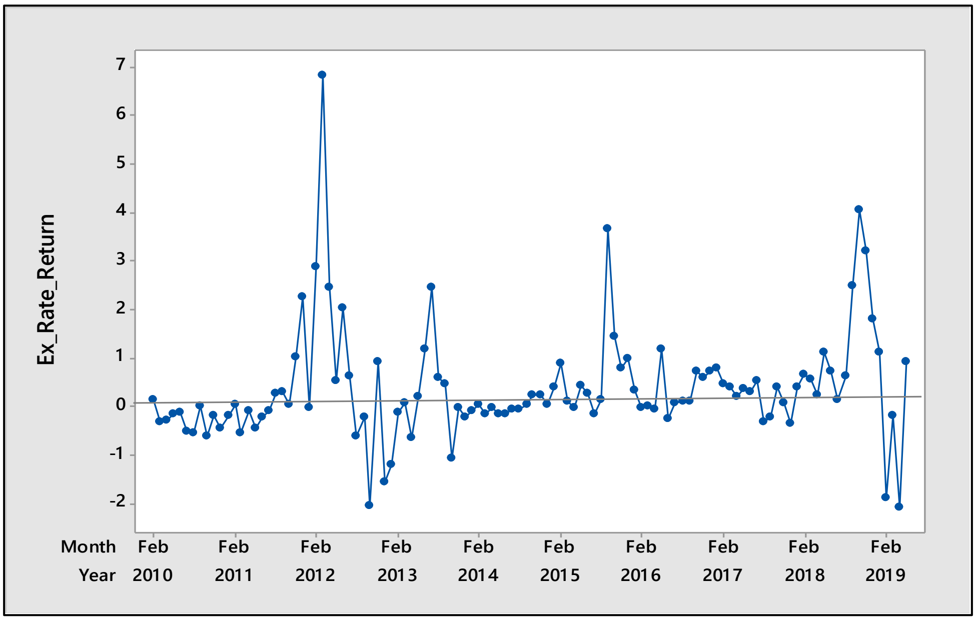

Figure 3: Monthly Logarithmic Return of Exchange Rate

According to Figure 3 provide evidence that time varying volatility in monthly return is empirically shown as return clustering and confirmed one stylized fact. There appears to have been a prolonged period of relative tranquility, it evidenced by relatively small positive and negative returns. On the other hand, there was far more volatility, when many large positive and large negative returns are observed during the sample time. This clustering volatility suggests that residual or error term is conditionally heteroscedasticity and it can be estimated by ARCH and GARCH models.

Table 1: Descriptive Statistics of Monthly Logarithmic Return of the Exchange Rate

	Mean	**Median**	**Max.**	**Mini.**	**Std.Dev**	**Skewness**	**Kurtosis**	**Jarque-Bera**	**P Value**
USD	0.38	0.13	6.83	-2.05	1.16	2.13	11.64	433.234	0.00

Table 1 indicates the descriptive statistics for the Exchange Rate Return. The exchange rate return varies -2.05 (min = -2.05) and 6.83 (max= 6.83) with mean 0.38 and standard deviation of 1.016. USD/LKR have long right curve (positive skewness). Kurtosis is positive and it implied exchange rate has fatter tails. This is called Leptokurtic. The JB statistic confirms that the null hypothesis of normality for the exchange rate return is not rejected at the 5% significant level. It confirmed the departure of non-normality. Thereby, exhibiting one of the important characteristics is nonnormality distribution of fat tails of financial time series data.

4.2 Models analyses

The results of the unit root test for exchange rate returns are given in the table 2 as follows.

Table 2: Results of Stationary Test for Exchange Rate Return

Variable	**ADF**				**PP**			
	Intercept		**Intercept and trend**		**Intercept**		**Intercept and trend**	
	level(P)	1st dif(P)	level(P)	1st dif(P)	level(P)	1st dif(P)	level(P)	1st dif(P)
USD_EX_RET	0.00*	-	0.00*	-	0.00*	-	0.00*	-

- *Optimal lag length as determined by SIC*
- ** denotes statistically stationary at the 5% level.*

The ADF test and PP were conducted on both the intercept and intercept and trend. The results of the ADF tests present that exchange rate return is stationary at the level. As well as PP tests confirm that results. According to ADF and PP results the null hypothesis of a unit root is rejected at its level. Thus, the exchange rate is stationary and integrated in level. Normally, financial data showed non stationary, but in here, exchange rate is stationary in its level. Figure 4 presents correlogram of monthly logarithmic return of the exchange rate.

Sample: 2010M01 2019M05
Included observations: 112

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.484	0.484	26.929	0.000
		2	0.270	0.047	35.403	0.000
		3	0.202	0.072	40.193	0.000
		4	0.052	-0.104	40.508	0.000
		5	-0.109	-0.157	41.920	0.000
		6	-0.138	-0.043	44.212	0.000
		7	-0.114	0.011	45.779	0.000
		8	-0.044	0.084	46.016	0.000
		9	-0.200	-0.242	50.952	0.000
		10	-0.217	-0.095	56.845	0.000
		11	-0.144	-0.010	59.484	0.000
		12	-0.085	0.070	60.397	0.000
		13	-0.108	-0.043	61.895	0.000
		14	-0.047	-0.021	62.178	0.000
		15	0.034	0.007	62.329	0.000
		16	0.046	-0.019	62.611	0.000
		17	0.012	0.007	62.631	0.000
		18	-0.029	-0.094	62.742	0.000
		19	-0.054	-0.089	63.140	0.000
		20	-0.069	-0.057	63.798	0.000
		21	-0.052	0.055	64.183	0.000
		22	-0.045	-0.015	64.467	0.000
		23	-0.097	-0.151	65.807	0.000
		24	-0.063	-0.019	66.377	0.000
		25	-0.057	-0.022	66.850	0.000
		26	-0.008	0.100	66.859	0.000
		27	-0.020	-0.066	66.920	0.000
		28	-0.020	-0.087	66.983	0.000
		29	0.013	-0.051	67.009	0.000
		30	0.002	-0.019	67.009	0.000
		31	-0.014	0.037	67.039	0.000
		32	-0.010	-0.079	67.056	0.000
		33	-0.056	-0.142	67.561	0.000
		34	0.051	0.107	67.980	0.000
		35	0.002	-0.012	67.981	0.001

Figure 4: Correlogram of Monthly Logarithmic Return of the Exchange Rate

According to figure 4 the null hypothesis of the Q statistics is rejected for the exchange rate return in level form. The test statistics are statistically significant with p values not greater than 0.05, indicating that the return is not white noise, indeed the monthly exchange rate return exhibits a correlation. Researchers determine the form of the ARMA (p, q) from the correlogram of Figure 4. Parameters p and q can be defined from partial autocorrelation coefficients and autocorrelation coefficient, respectively.

Table 3: Estimated Mean Equations

Model	Coeff				Model selection Criteria			Serial correlation LM test		ARCH test		JB test	
	C	P Value	AR	P Value	AIC	SC	HQC	Obs. R^2	P Value	Obs. R^2	P Value	JB	P Value
ARMA (1,0)	0.33	0.057 **	0.45	0.00*	2.75	2.8	2.77	6.303	0.042 *	3.88	0.048*	627.7	0.0*

- **and ** denotes statistically significant at 5% and 6% respectively.*

Table 3 provides the estimations of mean model of exchange rate return and the p values of the parameters (coefficients) together with the values of model selection criteria, as well as the results of autocorrelation test, heteroscedasticity and normality test. According to model selection criteria which are AIC, SC, HQC are recorded as the lowest in the model ARMA (1, 0), when it is compared with other models. That implies ARMA (1, 0) model is the best fitted model as far as the mean monthly return.

As well as according to table 3 all coefficients which is constant and autoregressive model in order 1 are statistically significant respectively in 6% and 5% level of significant. The serial correlation results provide an evidence for rejecting the null hypothesis at the 5% significant level and indicated the existence of autocorrelation in residuals and the fitted model is adequate. The ARCH test results provide an evidence for rejecting the null hypothesis at the 5% significant level and indicated the existence of ARCH effect in residuals series in the mean equation. JB test results confirm that the null hypothesis of normality for the mean model is rejected at the 5% significant level, which means residuals of the model are not normally distributed.

The exchange rate return that fulfill the conditions, where necessary to proceed volatility models which are existence of ARCH effect and serial correlation of the mean model, has gain to modeling GARCH models. Since there are both ARCH effects and serial correlation on the return of the exchange rate, researchers proceed with the estimation of ARCH (1), GARCH (1, 1) and EGARCH (1, 1) models with normal, student-t and generalized error distributions. The parameters of estimated models, the results of test of normality, conditional heteroscedasticity of the residuals and value of the log likelihood function and model selection criteria presented in table 4.

Table 4: Estimated volatility models

ARMA(1,0)-ARCH(1) - $\boldsymbol{\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2}$

Parameter	**Normal**	**student's t**	**GED**
$\boldsymbol{\alpha}$	0.3782(0.00*)	146.4875(0.9988)	0.3522(0.0014*)
$\boldsymbol{\omega}$	0.6087(0.0421*)	508.6089(0.9988)	0.7371(0.1466)
LL	-114.0663	-91.24875	-90.269826
Jarque-Bera	353.8691(0.00*)	539.8889(0.00*)	358.3849(0.00*)
ARCH LM test	0.02006(0.8876)	0.1538(0.6958)	0.06224(0.8035)
		TDD 2.00(0.00*)	GP 0.6897(0.00*)

ARMA(1,0)-GARCH(1,1) - $\boldsymbol{\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2}$

Parameter	**Normal**	**student's t**	**GED**
$\boldsymbol{\alpha}$	0.241018(0.0003*)	125.4985(0.999)	0.15055(0.0836**)
$\boldsymbol{\omega}$	0.54047(0.058**)	621.7692(0.999)	0.77084(0.1910)
$\boldsymbol{\beta}$	0.24127(0.1356)	0.32281(0.0694)	0.2934(0.2004)
LL	-113.2501	-89.9728	-89.4076
Jarque-Bera	509..6235(0.00*)	967.2674(0.00*)	974.182(0.00*)
ARCH LM test	0.01609(0.8993)	0.07034(0.7914)	0.078987(0.7793)
		TDD 2.00(0.00*)	GP 0.7086(0.00*)

ARMA(1,0)-EGARCH(1,1) - $\boldsymbol{log\sigma_t^2 = \omega + \alpha\left|\frac{\varepsilon_{t-1}}{\sigma_{t-1}}\right| + \beta log\sigma_{t-j}^2 + \gamma\frac{\varepsilon_{t-k}}{\sigma_{t-k}}}$

Parameter	**Normal**	**student's t**	**GED**
$\boldsymbol{\alpha}$	-0.21761(0.003*)	1.6944(0.9116)	-0.5889(0.0075*)
$\boldsymbol{\omega}$	0.11829(0.1165)	1.4926(0.8743)	0.5503(0.0607**)
$\boldsymbol{\beta}$	0.4893(0.00*)	1.7222(0.8762)	0.2662(0.2658)
$\boldsymbol{\gamma}$	0.8249(0.00*)	-0.2045(0.3510)	0.6436(0.0007*)
LL	-111.7314	-89.8207	-89.7821
Jarque-Bera	183.088(0.00*)	302.0205(0.00*)	447.0162(0.00*)
ARCH LM test	0.1172(0.7328)	0.00(0.9899)	0.0002(0.9873)
		TDD 2.04(0.00*)	GP 0.675(0.00*)

- *Values in parentheses denote the p-values*
- *LL is the value of log-likelihood*
- ** and ** denotes statistically significant at 5% and 10% respectively*

According to table 4 considering the ARMA (1, 0) - ARCH (1) model with normal distribution, all the coefficients of variance equation is statistically significant in 5% level of significance and adequate. The same model with student t distribution, the all parameters are not significant as well as with generalized error distribution only the constant is significant in 5% significant level. Therefore, it can be concluded the models with above mention two distributions are not adequate.

Considering the ARMA (1, 0) - GARCH (1, 1) model with normal distribution the coefficients of GARCH constant (α) and GARCH error coefficient (ω) are significant in 5% and 10% significant level. However, GARCH Coefficient

(β) is not significant in mentioned significant level. It implies exchange rate return do not consist GARCH effect given significant level and model is not adequate. The same model with student t distribution and generalized error distribution, the all parameters are not significant even in 10% significant level. Therefore, it can conclude GARCH (1, 1) model with three distributions is not adequate.

Considering the ARMA (1, 0) –EGARCH (1, 1) model with normal distribution the all coefficients are significant except coefficient of symmetric effect (α). The measures the asymmetry or the leverage effect (γ) is greater than 0, it implies that positive innovations are more destabilizing than negative innovations. According to this model all coefficients are positive except constant this non negativity of parameters is not imposed in EGARCH.

Considering the ARMA (1, 0) –EGARCH (1, 1) model with generalized error distribution the all coefficients are significant except coefficient of the autoregressive term (β). The measures the asymmetry or the leverage effect (γ) is greater than 0 implies that positive innovations are more destabilizing than negative innovations. According to this model all coefficients are positive except constant this non negativity of parameters is not imposed in EGARCH. The same model with student t distribution, all parameters are not significant in 10% significant level. The all three EGARCH models are not implicated leverage effect. It can conclude EGARCH models with three distributions are not adequate because all parameters including models are not significant.

Therefore, ARMA (1, 0) - ARCH (1) model with normal distribution is the best fitted model for estimate USD/LKR exchange rate volatility. All parameters are significant, when they are compared with other models. As well as according to table 4, the ARCH LM test the results provide an evidence for not rejecting the null hypothesis and did not exhibit additional ARCH effect in the volatility model. This shows that the variance equation is well specified. That implies ARMA (1, 0) - ARCH (1) model with normal distribution is the best fitted model as far as the volatility monthly return. JB test confirms that the null hypothesis of normality for the volatility model is rejected at the 5% significant level, which means residuals of the model are not normally distributed. Figure 5 shows estimated exchange rate volatility.

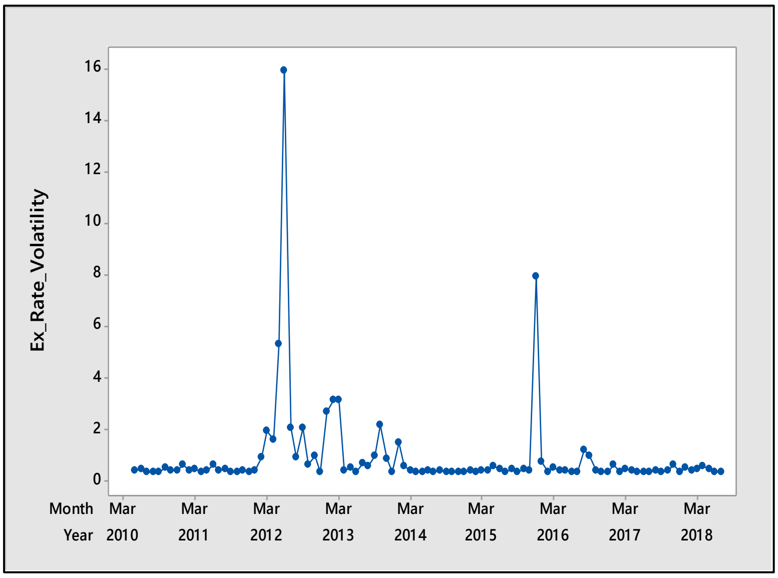

Figure 5: Estimated Exchange Rate Volatility

4.3 Forecasting exchange rate volatility

For the forecasting ARMA (1, 0)-ARCH (1) model on exchange rate volatility researchers used both the dynamic and static procedures. This computes for periods from July 2018 to May 2019. Table 5 present the criteria for the evolution of forecasting exchange rate volatility.

Table 5: Dynamic and Static Forecast of Exchange Rate Volatility

	MAE	RMSE	MAPE	Theil's Inequality Coeff.
Dynamic forecast	1.4841	1.8946	96.8731	0.83052
Static forecast	1.1661	1.5184	121.0961	0.47358

According to table 5 the lowest values of MAE, RMSE recorded for static forecasting and lowest MAPE recorded for dynamic forecasting. However, results indicate that the static procedure gives better results rather than the dynamic because Theil's statistics is lower in the static procedure.

5. Discussion of findings

This section intends to summarize the findings of the study. According to the results of descriptive statistics of Exchange, the rate return series of USD/LKR is leptokurtic. It means the distribution of return follows a fat tailed distribution (kurtosis>3) which was mentioned as important characteristics of financial time series data in the previous studies. These results are consistent with Dritsaki (2018), Omari et al. (2017) and Abdalla (2012) who estimated exchange rate volatility in their studies. LKR showed presence of have long right tail (positive skewness) observed for exchange rate return of USD. Abdalla (2012) also found positive skewness for AEU/USD and the same results were evident in Talwar & Bhat, (2018) who found positive skewness for USD/INR. JB statistics confirmed that the Exchange rate return showed a departure from non-normality. Figure 3 confirmed that the exchange rate return shows volatility clustering and this feature implies presence of ARCH effect. Hence it can be concluded that the exchange rate return of USD/LKR consist stylized facts such as clustering volatility, non-normality distribution of fat tails and volatility clustering.

According to the results of unit root test, Exchange rate return series is stationary in its levels on both used test. It implies that, it does not exist unit root behavior. It implies this financial data did not exist evidence for long memory process. This is in line with Dritsaki (2018) and is quite different from the results of Epaphra (2017), who found TZS/USD exchange rate is non stationary in its levels. Exchange rate return found ARMA (1, 0) or AR (1) (the model may be referred to base on the non-zero parameter) model as the best fitted mean equation. It implies exchange rate had AR process only. It indicates that the exchange rate return is regressed on its own lagged values. These results contradict with Ekanayake and Chatrna (2010) who found autoregressive model of order 2 (AR (2)) of the first difference of the real exchange rate. Exchange rate return has satisfied the necessary conditions of the ARCH model which indicated that ARCH effect and auto correlation exist in the exchange rate return. The characteristics of exchange rate series presented that a good model for exchange rate series should capture serial correlation, time varying variance, peakedness as well as fat tails.

ARMA (1, 0,)-ARCH (1) with normal distribution is best fittest model for exchange rate volatility because all the coefficients are statistically significant in 5% level of significance. It implies exchange rate had ARCH effect only. The positive coefficient of the model indicated that there is positive impact of a magnitude of a shock (spillover effect) for exchange rate. It can conclude there is positive impact on long term volatility for exchange rate. These results differ from Ekanayake and Chatrna, (2010) who did a similar study for quarterly data during 1980 to 2007 in Sri Lanka. It suggested that the exchange rate volatility influenced the sample period this result is quite different from Zakaria (2013) for Malaysia Ringgit/ USD and Talwar and Bhat, (2018) for INR/USD. Above mentioned model confirmed there are no additional ARCH effects and no serial correlation. It implies the model is adequate.

Thus, this model can be used for dynamic and static forecasting. According to forecast evaluation the lower MAE and RMSE scores (accurate forecasts given the quite low result above mention statistics) are produced by the static procedure. It indicates that the static procedure has better forecasting power than dynamic procedure. This result is in line with Omari et al. (2017) who applied ARCH/GARCH in modeling exchange rate volatility of the USD/KES exchange rate using daily observations over a period starting 3rd January 2003 to 31st December 2015. Similarly, the lower Theil's statistic is recorded for static procedure. Hence, it confirmed static forecast results are a better prediction of future exchange rate volatility rather than dynamic procedure for forecasting. Supposedly, static forecast allows the results of previous forecast to be done singly as a predictor of future exchange rate volatility outcomes and this is well tracked as the margin of error is quite small when compared to dynamic outcomes. The GARCH (1, 1) model confirms there is no significant GARCH effect in exchange rate return. Similarly, the asymmetric model (EGARCH (1, 1)) confirms there is no significant asymmetric effect and leverage effect in exchange rate in Sri Lanka.

6. Conclusion and contributions

The modeling and forecasting of the exchange rate volatility in Sri Lanka is extremely important to Sri Lankan economy as it depends mostly on imports and foreign investment. The study attempted to examine the stylized facts about volatility of exchange rate on USD/LKR, using symmetric and asymmetric models for the period starting from January 2010 to May 2019. Given that there are ARCH effect on exchange rate return, to capture the symmetry effect researchers estimated ARMA(1,0)-ARCH (1), ARMA(1,0)-GARCH (1, 1) and also ARMA(1,0)-EGARCH (1, 1) applied to capture the asymmetry and leverage effect including these effects on mean equation. These models were estimated with maximum likelihood method using the following distributions namely, normal, and student-t and generalized error distribution. Thus, study found evidence that monthly average returns could be characterized by the mentioned models and the result showed that the volatility is quite persistent for USD/LKR return.

The result of descriptive statistics suggested the exchange rate return is leptokurtic, had heavy tails and non-normality. The results of ARCH test pointed out existence of conditional heteroscedasticity (ARCH effect) in the residuals as well as volatility clustering effect. the study concludes ARMA (1, 0)-ARCH (1) model with normal distribution is the best in order to describe exchange rate return and also to capture ARCH effect, serial correlation, time varying variance, peakedness as well as fat tails. Finally, for the forecasting of ARMA (1, 0)-ARCH model, both the dynamic and static procedures are used. Static procedure is better than dynamic for forecasting. In case it will be advisable that the peculiarity of the economy is taken seriously in to consideration when forecast results of policy decisions. Moreover the use of comparative forecasts may also seem a good way of supporting policy makers' decisions. GARCH and EGARCH estimation results suggested the absence of GARCH effect and leverage effect in the exchange rate volatility, respectively. The results showed that exchange rate volatility in Sri Lanka is influenced by the previous information about exchange rate.

Particularly, the main policy implication of the study is that the economic policy makers should forecast the future values of exchange rates using the equivalent models for gauge the benefits. The findings of the study have important implications regarding the role of respective authorities and market players in Sri Lanka. It is imperative in managing a viable capital market and should be aware of the possible effect of symmetry to ensue exchange rate stability and exchange rate volatility estimation and forecasting.. The study focused on some of GARCH models and USD/LKR exchange rate only. Hence, focused on more GARCH family models and testing the findings of the current study, for other commonly used foreign currency pairs is left for future research.

However it is also configured some limitations of the present study as follows. The study mainly depends on the secondary data and sources of CBSL. The ways of calculated and gathered data are beyond purview. The accuracy and the reliability of the study depend on the secondary data. However, this is the only source available for necessary data to proceed with this study. The study focused only on the USD/LKR exchange rate. Therefore, the findings cannot be generalized totally to other exchange rates in the market.

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Human Resource Management

Factors affecting job satisfaction in the textile industry: An empirical study based on Thulhiriya Board of Investment Area

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Abstract

Employee satisfaction has always been an important issue for organizations. Employees are viewed as the greatest strengths and resources of an organization. An organization's success depends on the employees and thus they should not be deprived of what they deserve in return for their commitment to the organization. It is very crucial that the employees of an organization derive satisfaction from the job. However, very few organizations have made employee satisfaction a top priority, perhaps because they fail to understand the significant opportunity that lies in front of them. Many organizations fail to understand the basic meaning of employee satisfaction. Employee satisfaction is more of an attitude – an internal state. Previous studies had identified factors affecting the job satisfaction of employees in textile industry excluding the factors of working environment. Therefore, this study attempted to identify the factors that determine job satisfaction of garment industries incorporating a specific area of working environment conditions of employees. This study was conducted using primary data collected from Thulhiriya Board of Investment (BOI) area. Through the random sampling method, a total of 300 questionnaires were analyzed using logit econometrics model and frequency tables. The findings indicate that the variables of health status, service period, gender, age of the employee and wage level are significant variables that determine employee satisfaction in textile industries while education level, amount of incentives and marital status are insignificant variables that determine employee satisfaction. Based on frequency table analysis we can conclude that employees are highly satisfied with the planning process, vocational training and their job performance while moderately satisfied with work, supervision and training. Also, they are dissatisfied with payment scheme and team sprit with co-workers. Results indicate that the both employee oriented and work environment factors are important to determine job satisfaction of employees in textile industries.

Keywords: Job Satisfaction; Logit Model; Textile industry

1. Background of the study

For almost all organizations, employees are the vital resource and they represent an important asset. Human resource management is concerned with developing the potential of employees so that they get maximum job satisfaction from their work and give their best efforts to the organization. Employee attitude is based on the job satisfaction. Job satisfaction is contentment that occurs out of the employee's positive and negative feelings

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toward his or her work. The consequences of job satisfaction are very much important to an organization in terms of its efficiency, productivity, employee relations, absenteeism and turnover and to an employee in terms of his health and well-being. There are several human resources problems such as high labour turnover, absenteeism etc, which act as a barrier leading to minimize the efforts towards achieving organizational objectives in the apparel industry.

Job satisfaction reduces absenteeism, labor turnover and accidents. Job satisfaction increases employee's morale, productivity, etc. Naturally it is the satisfied worker who shows the maximum effectiveness and efficiency in his work. Job satisfaction is the overall attitude of well-being with regard to job and its environment. The feeling about the job is directly affected by job factors like salary, kind of work performed, supervision, working condition, opportunity for advancement etc. Job satisfaction also takes into account the personality, interests, opportunities and capacities of employees.

Garment industry has an important place in Sri Lanka's economy. It has become Sri Lanka's largest export industry since 1986. It is also the country's largest net foreign exchange earner since 1992. Total value of export earnings in the sector was at US dollars 2,424 million accounting for 52 per cent of the total export earnings in 2002. The contribution to the Gross Domestic Product (GDP) was 5.3 per cent in 2002. This industry provides more than 330,000 direct employment or 5 per cent of country's total employment in more than 1,060 garment factories. Sri Lanka's garment exports have been largely governed by the Multi- fibre Arrangement (MFA) since 1978.

The MFA is a system of export restrictions imposed by developed countries on textiles and garment exports originating in developing countries to protect the garment industry in developed countries. The Uruguay Round Agreement on Textiles and Clothing (ATC) of World Trade Organisation (WTO) succeeded MFA in 1995. According to the new rules, the sector is to be fully integrated into normal rules of WTO by phasing out MFA in four phases by 2005. Sri Lanka has already fulfilled its commitments under Phase I and Phase II of the elimination of MFA phasing out procedures. In 1996 and 1998, the government submitted the lists of items on which Sri Lanka is ready to accept the removal of quota to the Textiles Monitoring Body of WTO. The third phase of integration became effective on January 2002. The MFA, by providing a ready market, has restricted Sri Lanka's exports but has protected it from competitors. Phasing out of MFA will open more markets to Sri Lanka's exports, and at the same time will intensify competition from other developing countries.

The future of the garment industry depends, to a large extent, on the ability to compete in a free market where both garment producing developed and developing countries in the world will be players in the market. Over the last 20 years, a strong foundation has been laid for the industry, on which the future of this sector could be strengthened further and safeguarded.

2. Literature review

The most frequently used definition of job satisfaction has been given by Locke (1976), who defined it as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences”. There seems consensus that job satisfaction has obtained a recognized position in the literature of industrial and organizational psychology (Maanen & Katz, 1976).

Harter, Schmidt, and Hayes (2002) mention that 7,855 articles having been published between 1976 and 2000, on job satisfaction. A majority of the research examining the employee satisfaction-performance relationship has been conducted on the micro level of analysis and a handful of studies have explored the relationship between aggregated employee job satisfaction attitudes and organizational (unit level) performance (Ostroff, 1992; Herzberg, Mausner, & Snyderman, 1959; Maanen & Katz. 1976; Petty, Mcgee, Gail, & Cavender, 1984).

Islam and Swierczek (2003) analyzed the impact of technological change on job satisfaction of women garment workers in Bangladesh. The specific relationship between job satisfaction and the overall impact defined in socio economic terms shows that fair pay; task significance, bureaucracy, conflicts and information sharing are significantly related. Task significance and information sharing are positively related to the overall impact. Unfairness in pay, high bureaucracy and higher level of conflicts cause a limited positive overall impact on women workers. The positive relationships to technological change include improvement of task significance, salary increase, improvement of the quality of supervision, improved quality of relation and increase benefits. The negative consequences are unfair pay, work dissatisfaction, bureaucracy, conflicts between management and workers, and decreased promotion for workers.

Herzberg, Mausner, and Synderman (1959) formulated the two-factor theory of job satisfaction and postulated that satisfaction and dissatisfaction were two separate, and sometimes even unrelated phenomena. Intrinsic factors named ‘motivators’ (that is, factors intrinsic to the nature and experience of doing work) were found to be job ‘satisfiers’ and included achievement, recognition, work itself and responsibility. Extrinsic factors which they named ‘hygiene’ factors were found to be job ‘dissatisfies’ and included company policy, administration, supervision, salary, interpersonal relations and working conditions. Herzberg, Mauser, and Synderman’s (1959) Motivation-Hygiene theory has dominated the study of the nature of job satisfaction and formed a basis for the development of job satisfaction assessment.

Satisfaction with the job alone, will not produce a satisfied and engaged workforce, but it is a contributory factor among many others. This phenomenon is visible in some positions where the actual job itself is intrinsically satisfying but the place of work is not, for example academics or specialized maintenance trades operating in large organizations. In these situations, the employee feels the organization does not value the job they do, but they, personally, take great pride in their work, regardless of the company culture and working environment.

Several researches have studied the relationship between organizational culture and employee satisfaction. Organizational culture has been defined by Schwartz and Davis (1981) as a pattern of beliefs and an expectation shared by the organization's members and is work-related values, ideologies, philosophies and beliefs. Behery, Paton, & Robert (2008) studied 200 UAE middle level managers, from banking, insurance and real estate industries. The study revealed that employee satisfaction reinforces employee commitment and reduces turnover rates. Employees like to continue with an organization, if they are satisfied with the job. Thus, the satisfaction depends on organizational control mechanisms.

Ambuldeniya (2017) conducted a research on the impact of employee job satisfaction on employee productivity in the apparel industry of Sri Lanka which is an attempt to find out the impact of employee job satisfaction on employee productivity. This study found that employee satisfaction towards employee relations has the highest impact on employee productivity other than the satisfaction towards organizational culture and competitor organizations. Competitor organizations had the least impact on employee productivity. Finally, the study conclude that management of organizations including those in the Apparel Industry of Sri Lanka should be concerned about maintaining healthy relationships between employer and employee as well as among employees in order to ensure employee job satisfaction which enhance employee productivity resulting in organizational success.

Perera (2014) examines the job satisfaction and job performance among factory employees in apparel sector using 17 apparel firms situated in the free trade zones. A self-developed questionnaire was used to collect data. A total of 383 questionnaires were distributed among respondents and 322 usable questionnaires were returned, yielding a response rate of 84%. The data was analyzed by using descriptive analysis and structural equation methods. The findings show that job satisfaction has a significant positive effect on job performance.

In this environment for employee satisfaction, it is important to know which factors affect employee satisfaction. This research attempted to fill this research gap. Accordingly, the research questions are, 1) do employee-oriented factors impact job satisfaction of employees; and 2) do work related environment factors affect employee job satisfaction. The objectives of the study are: to study the factors influencing job satisfaction of employees, to analyze the workers satisfaction level towards various factors of wages and salary, promotion opportunities, working conditions, training and development, company policies and rules, relationship with co-workers, job security of a textile unit in Sri Lanka and to provide some suggestions based on the analysis.

3. Research methodology

The methodology consists of the methods used in designing, sampling, collecting, measuring, analyzing, and presenting the data relevant to this research study. As this research aims to identify the factors that contribute to employee satisfaction within the textile industry, the study design is a logit econometrics analysis. The econometric model explains the nature of certain relationships between the dependent and independent variables. Therefore, this study is analytical in nature rather than exploratory or descriptive and with reference to the following structure.

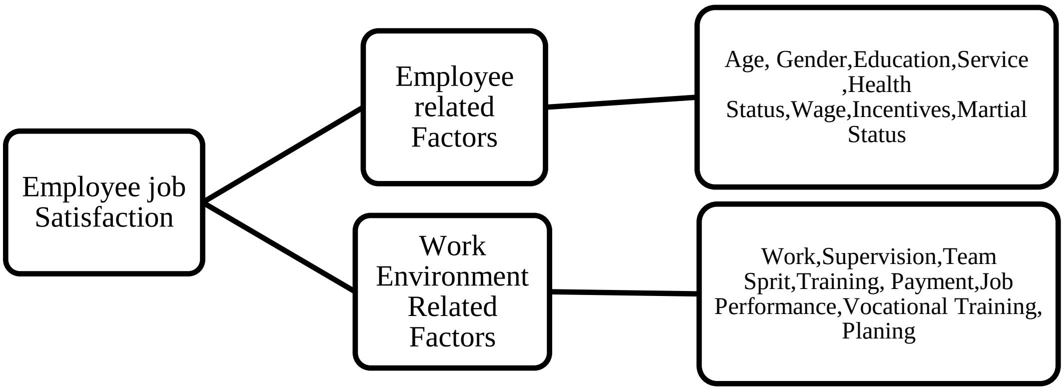

Figure 01: Determinants of Employee Job Satisfaction

3.1 Purpose of the study and type of investigation

The purpose of this research was to investigate the factors affecting employee satisfaction in textile industries in Sri Lanka. In order to analyze the employees' satisfaction level towards various factors of wages and salary, promotion opportunities, working conditions, training and development, company policies and rules, relationship with co-workers, job security of a textile unit in Sri Lanka and provide some suggestions based on the analysis.

This research was conducted based on the knowledge gained from a previous research done in this field. The previous studies had identified factors affecting job satisfaction of employees in garment industry excluding the situation of working environment and employee-oriented factors. Therefore, this study attempted to identify the factors that determine job satisfaction of employees within the garment industry, incorporating the area of working environment conditions of employees.

For these reasons, this research will follow logit model analysis and frequency table. The aim is to be familiar with the factors affecting job satisfaction of employees in the garment industries and to gain a deeper understanding about the topic.
Following model is used to identify the factors of job satisfaction of employees in the garment industry.

$$Y_i = \beta_0 + \beta_1 wage + \beta_2 health + \beta_3 edu + \beta_4 age + \beta_5 service + \beta_6 incentive + \alpha_1 married + \alpha_2 female + u_i$$

$Y_i = probability\ of\ employee\ satisfaction\ \ 1 = Satisfied\ \ 0 = disdsatisfied$
$\beta_0 = Intercept$
$\beta_1 = Wage\ level\ (per\ month\ Rs:)$
$\beta_2 = Medical\ Leaves\ (Per\ Month)$
$\beta_3 = Educational\ Level\ (years)$
$\beta_4 = Age\ (Years)$
$\beta_5 = Service\ period\ (Years)$
$\beta_6 = Amount\ of\ Incentives (Rs. Per\ month)$
$\alpha_1 = married \quad 1 = married\ 0 = unmarried$
$\alpha_2 = Female\ \ 1 = female\ 0 = male$
$u_i = Error\ term$

The data will be analyzed using the statistical tool called Logit Model.

3.2 Data collection

The study was conducted in a Thulhiriya BOI area in the district of Kegalle. The sample size was 300. The primary data was collected through a questionnaire. The questionnaire was designed in such a way that it analyses the factors related to job satisfaction. A problem faced by the organization was the continuous attrition rate affecting the overall growth of the organization. The research design used in this study is the exploratory research design.

Sample design

The sampling frame is the pool from which the interviewees are chosen. All the items in any field of inquiry constitutes a universe of population. In this research only a few items can be selected from the population for our study purpose. The items selected constitute what is technically called a sample. The sample size is 300 employees from the total population of the employees. Out of 450 total workers in a company 300 workers are selected on the basis of strategic random sampling technique.

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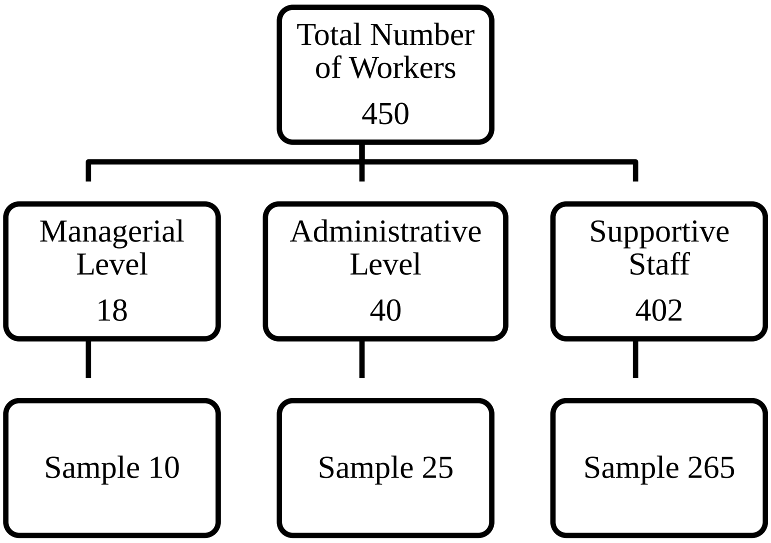

Figure 02: Determination of the Sample Size

The questionnaire survey

Questions were framed in a way that the answers reflect the ideas and thoughts of the respondents with regard to the level of satisfaction of various factors of employee satisfaction.
• Work Profile
• Relationship with immediate supervisor,
• Provide the tools and training an employee needs to succeed.
• Offer a competitive compensation/pay package
• Management recognition of employee job performance
• Supportive management style
• Offers career development opportunities
• Honest communication
• Organization culture

The scaling technique used for designing the questions in the interview schedule are Likert method.

3.3 Data analysis

Mean Values of Variables

In order to analysis the data according to the objectives it is important to present the mean values of all variables which were used in the logit model.

Table 01: Mean values of variables

Variable	Mean Value
Wage Level	27707.86
Medical Leaves	1.12
Education Level	12.66
Age	27.70
Service Period	4.67
Incentives	2788.71
Gender	0.36
Marital Status	0.45

Source: Compiled by the author from field survey

Mean values of the selected variables are presented in Table 1. According to the results average wage level is Rs: 27707.86 and average medical leaves of employees is 1.12 days, mean value of education in years is 12.66 which indicates that the employees who join this textile factory have completed their ordinary level education. Mean value of age 27.7 indicates that most of workers are in their effective age. Average value of employee service period is 4.67 years and an employer paid Rs. 2788.71 incentives on average per month.

Identifying the determinant factors of job satisfaction

Table 02: Identifying significant variables of job satisfaction

Variable	
Wage Level	0.067***
Medical Leaves	0.000*
Education Level	0.478
Age	0.006**
Service Period	0.000*
Incentives	0.296
Gender	0.011**
Marital Status	0.320

Source: Compiled by the author from field survey
, **.and * represent that significance in 1%, 5% and 10% respectively.*

According to the logit model output, the results of the variables reveals that current health status and service period is significant at the 1% significant level. It reveals that these variables are main determinants of job satisfaction of workers. Also, the variables of age and gender are significant at (5%) lower significant level while wage level is significant at 10% significant level. It means that age, gender and wage level is not a predominant determinant of employee job satisfaction. Education level, incentives and martial status variables are not significant variables indicating that these variables do not affect employee job satisfaction in textile industries.

Marginal effects of variables

Table 03: Marginal effects of variables

Variable	dy/dx	P-Value	Mean Value
Wage Level	0.0000107	0.060***	27707.86
Medical Leaves	-0.200214	0.000*	1.12
Education Level	.0134041	0.475	12.66
Age	-.0167288	0.005 **	27.70
Service Period	.0840355	0.000 *	4.67
Incentives	-0.0000269	0.292	2788.71
Gender	.1159822	0.008 **	0.36
Marital Status	.0519368	0.319	0.45

Source: Compiled by the author from field survey
, **.and * represent that significance in 1%, 5% and 10% respectively.*

Results of marginal effect analysis of variables on employee job satisfaction indicate that when employees' medical leaves increase by one day, probability of having a satisfaction with their job would decrease by 0.20 when other variables are constant at 10% significance level. If their service period increases by one year, probability of having satisfaction with their job would increase by 0.08 ceteris paribus. Also relative to the female worker, probability of job satisfaction of male worker is higher by 0.11 at 5% significant level when other variables are constant. Finally, we can say that currant health status and age have negative marginal impact on job satisfaction of employees while wage level, service period and gender have positive marginal effects. Education level, marital status and incentives have positive and negative marginal effects, but they are not significant in even 10% significant level.

To analyze the workers satisfaction level towards various factors of wages and salary, promotion opportunities, working conditions, training and development, company policies and rules, relationship with co-workers, job security of a textile unit, the collected data have been analyzed through the method of Frequency Table:

Table 04: Work

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	173	57.2	57
Agree	30	10.0	67
Neither Agree/Disagree	45	15.0	82
Disagree	38	12.6	95
Strongly Disagree	14	4.6	100
Total	300	100	100

Based on Table 04, it can be said that workers (67%) are moderately satisfied with their work. That means tasks of employees’ effect on job satisfaction.

Table 05: Supervision

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	82	27.3	27.3
Agree	69	23.0	50.3
Neither Agree/Disagree	65	21.7	72
Disagree	54	18.0	90
Strongly Disagree	30	10.0	100
Total	300	100.0	100

From the Table 05, we can say 50% of workers are satisfied with their supervision.

Table 06: Training

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	140	46.7	46.7
Agree	64	21.3	68
Neither Agree/Disagree	87	29.0	97
Disagree	9	3.0	100
Strongly Disagree	0	0.0	100
Total	300	100	100

From the data in Table 06 we can conclude that workers (68%) are satisfied with their training. Because training is a key component of their job performance.

Table 07: Payment

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	97	32.3	32.3
Agree	10	3.3	35.6
Neither Agree/Disagree	128	42.6	78.2
Disagree	59	19.6	97.8
Strongly Disagree	6	0.2	100
Total	300	100	100

Table 07 shows that salary package cannot satisfy workers (64.4%), because of the increasing cost of living. That means salary does not affect job satisfaction.

Table 08: Job performance

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	86	28.6	28.6
Agree	139	46.3	74.9
Neither Agree/Disagree	42	14.0	88.9
Disagree	12	4.0	92.9
Strongly Disagree	21	7.0	100
Total	300	100	100

From the data in Table 08, we can interpret that workers (75%) are satisfied with the job performance. That means job performance affects their job satisfaction.

Table 09: Team sprit

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	28	9.3	9.3
Agree	17	5.6	14.9
Neither Agree/Disagree	52	17.3	32.2
Disagree	164	54.6	86.8
Strongly Disagree	39	13.2	100
Total	300	100	100

Table 09 shows that there is no good relationship among co-workers.

Table 10: Vocational training

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	153	51.0	51.0
Agree	78	26.0	77.0
Neither Agree/Disagree	44	14.7	91.7
Disagree	18	6.0	97.7
Strongly Disagree	7	2.3	100
Total	300	100	100

Based on Table 10, we can conclude that 77% of workers are satisfied with their vocational training.

Table 11: Planning

Satisfaction Level	Frequency	Percentage	Cumulative Percentage
Strongly Agree	149	47.6	49.6
Agree	87	29.0	78.6
Neither Agree/Disagree	23	7.6	86.2
Disagree	32	10.6	96.8
Strongly Disagree	9	3.2	100
Total	300	100	100

Table 11 shows that most of workers (78.6%) are satisfied with their planning process.

Based on above frequency table analysis we can conclude that employees are highly satisfied with the planning process, vocational training and their job performance while moderately satisfied with work, supervision and training. Also, they are dissatisfied with payment scheme and team sprit with co-workers.

4. Discussion of findings

The Table 2 shows that out of eight variables, only four variables are applicable to employee satisfaction within the garments industry in Thulhiriya BOI area, Kegalle District. The variables regarding which have an impact on satisfaction are gender, service period age, present health care facilities and wage level. The variables regarding which workers have dissatisfaction are education level, marital status and incentives. According to the frequency table analysis employees are highly satisfied with the planning process, vocational training and their job performance while moderately satisfied with work, supervision and training. Also, they are dissatisfied with payment scheme and team sprit with co-workers. According to Hamdan (2011) highly satisfied employees are motivated to work in the organization, do their work at optimum level and perform better than less satisfied workers. According to Organ (1977) and Petty, Mcgee, Gail & Cavender (1984), a satisfied worker is also considered a productive employee. Frequency table analysis is in line with these empirical results. The study further suggested that working hours, overtime benefits, recognition for good work, management policy, promotional opportunity and good relations with colleagues, working environment, job status, autonomy in work, participation in management, and open communication impacts their overall job satisfaction. There was not significant influence of personal factors such as educational level, marital status, income and skills on the overall job satisfaction among the workers of the garment industry.

5. Conclusion and contributions

According to the results of the logit econometrics analysis, it was found that gender, wage level and service period positively and significantly impact on job satisfaction of employees while health status and age of the employee, negatively and significantly affect job satisfaction of employees. The results of the frequency tables help conclude that employees are highly satisfied with the planning process, vocational training and their job performance while moderately satisfied with work, supervision and training. Also, they are dissatisfied with payment scheme and team sprit with co-workers.

From the above analysis the following suggestions can be made for improving employee job satisfaction;

- Compensation/ Salary & bonus package should be increased according to cost of living and to be paid regularly at the correct time.
- Ensuring workplace safety to increasing job satisfaction.
- Participation in management to be ensured.
- Job security and training facilities to be ensured.
- Promotional opportunities should be increased than those currently available.
- Workers are to be awarded for improved performance.

It is believed that the conclusions of this research will be of use to all textile garment factories in Sri Lanka to identify the most important factors that affect job satisfaction of employees in promoting programs that are useful to encourage performance of employees in reaching higher levels of organizational success.

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Antecedents of organizational citizenship behavior in two selected semi government service organizations in Sri Lanka

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Navaratne N. N. J.[2]

Abstract

This study examines the relationship between four antecedents and Organizational Citizenship Behavior (OCB) in two Semi Government organizations in Sri Lanka. Previous research studies have been conducted on OCB among public and private sector organizations in Sri Lanka but there appears to be a lack of such studies on the semi government sector. Therefore, the main purpose of the study is to identify the relationship between three individual antecedents (self-esteem, emotional intelligence and job satisfaction) and one Leadership Style (transformational leadership) with OCB. The primary data were gathered through a questionnaire-based survey with a sample of 109 semi government sector employees. Data analysis was mainly done with SPSS 21. Results confirmed the self-esteem, emotional intelligence, job satisfaction and transformational leadership are positively and significantly related with OCB in the context of the study. The main finding of this study is that all four independent variables individually and collectively work as strong predictors of OCB.

Keywords: Emotional intelligence (EI); Job satisfaction; Organizational Citizenship Behavior (OCB); Self-esteem; Transformational leadership

1. Introduction

Regardless of the industry or sector, any organization is directly affected by their employees. Literature widely discuss and acknowledge the fact that "employees make a critical difference when it comes to innovation, organizational performance, competitiveness, and thus ultimately business success" (Bakker & Schaufeli, 2008, p.147). Further, past literature provides extensive evidence on various aspects such as commitment, capabilities, attitudes and behaviors through which employees contribute to the performance of an organization (Bandura, Johnson, & Lyons, 2014; Raza, Anjum, & Zia, 2014). As the corporate has become more dynamic and decentralized, out of these various ways of contribution employee behavior has become a critical determinant of organizational success (Crant, 2000). According to Haq et. al (2011), "the role of human behavior is viewed as an important factor of performance by many scholars due to its quick response towards any change" (p.1).

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Work place is a setting where very diverse behaviors are shown, each with a unique consequence to the particular person himself as well as the entire organization (Applebaum, Laconi, & Matousek, 2007). Katz (as cited in Nielsen, Hivnak, & Shaw, 2009) shows that being sensitive to the impact employee behavior has on an organizational setting, managers are very interested to hire and retain employees with helpful, corporative, engaged behavior patterns or in other words people who are happy to go beyond the call of duty. Katz and Kahn (as cited in Nielsen et al., 2009) widely acknowledge and accepts the importance of Organizational Citizenship Behavior (Subsequently referred to as OCB during this study) patterns similar to other scholars (Barnard, 1938, as cited in Nielsen et al., 2009) and Haq et al. (2011) argues that the continuation of research on the particular topic is important due to the dynamic nature of it.

The concept of "going beyond the call of duty" or OCB is the most important consequence that has won primary focus among scholars during the past (Nielsen et al., 2009). This focus is based on the "intuitively appealing notion that employees who are more helpful and cooperative will perform better and be perceived as performing better by their managers" (Nielsen et al., 2009, p.1). Today in a growing, changing, innovative and flexible work environment, OCB is essential for effectiveness, higher performance and productivity because it fosters good influence on performance (Islam, Akter, & Afroz, 2015). Agarwal (2016) in his study highlights the importance of OCB by saying that OCB is not a conduct that is demanded by organizations but indeed they are in need of it. He further says that long term survival of an organization to a great extent depends on how much its employees engage in OCB. Voluntary behavior such as OCB is positively connected with financial performance, customer services and work quality (Bandura et al., 2014).

Examining conceptualizations of OCB across country contexts are more practical since findings are always context specific and would vary depending on where they are examined (Rauf & Kumar, 2015). In terms of studies conducted in Sri Lanka, mainly in public and private sector context evident that OCB as a concept has been widely explored (Rauf & Kumar, 2015; Silva & Madumali, 2014; Ranasinghe, 2016). The public sector and semi government sector of Sri Lanka are very important to citizens since its priority is public interest and citizen welfare. Therefore, studying optimum utilization of pro social behaviors such as OCB for enhanced effectiveness and performance of these sectors may help provide better services to the people.

Empirical studies on the relationship between antecedents of the OCB remain vast in foreign countries and most of the studies have paid significant attention to exploring OCB (Dash & Pradhan, 2014; Smith, Organ, & Near, 1983;). Previous studies have explored many individual antecedents such as age, education, attitudes, self-esteem, ability, emotional intelligence, job satisfaction and conscientiousness while some studies have explored organizational antecedents such as formalization, organizational flexibility, and transformational leadership (Ariani, 2012; Alhyasat, 2012; Turnipseed & Vandewaa, 2012; Magdelane, 2014; Whelpley & McDaniel, 2016). Studies conducted in Sri Lanka also found that behavioral antecedents lead to OCB

(Silva & Madhumali, 2014). Though, there are many research conducted on OCB among public and private sector organizations (Kishokumar, 2016) there appears to be lack of such studies on semi government sector and this has created an empirical gap. Moreover, the semi government sector is of great importance since it is the portion of the public sector that is burdened with profit and economic contribution goals. Therefore, the importance of conducting studies to help discover methods of promoting behavior patterns such as OCB that would benefit the organization and make it more effective is very important. The empirical gap created by the lack of such studies on the semi government sector leads to the problem as to "what antecedents are related with the organizational citizenship behavior in the semi government sector organizations in Sri Lanka"? In order to address this problem, the following objectives are developed: (a) to examine the level of existence of OCB in the semi government sector, (b) to explore the relationship between individual antecedents and OCB in the semi government sector and (c) to explore the relationship between leadership style antecedents and OCB in the semi government sector.

2. Literature review

2.1 Overview of Organizational Citizenship Behavior (OCB)

OCB, also known as the Good Solder Syndrome (Rose, Herd, & Palacio, 2017) sees its initial development in 1983 by Bateman and Organ and again during the same year by Smith, Organ and Near (Organ & Ryan, 1995). Since then, research on OCB has encountered many developments over the decades. According to Chou and Pearson (2012) "given the perceived importance of OCB, the number of OCB studies has increased dramatically" (p. 1171).

When exploring past literature, it is evident that many behavioral scientists have adopted discretionary methods of defining OCB. Organ (as cited in Sharma, Bajpai, & Holani, 2011) defined OCB as "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization" (p.68). Organ and Ryan (1995) discuss a concept named "Contextual Performance" and according to them contextual performance is about contributing to the organizational effectiveness by doing things that are not part of their main job role but in fact helps to shape the success of the organizational performance. Organ and Ryan (1995) say that OCB is of the same nature.

Similarly, Organ and Konovsky (as cited in Allen & Rush, 1998) said that OCB "includes behaviors such as constructive or cooperative gestures that are neither mandatory in-role behavior nor directly or contractually compensated for by formal organizational reward systems" (p.247). Some studies describe OCB as "extra-role" or additional things people do that are beneficial for the organization but it is not a must to do (Dalal, 2005).

Some studies define OCB as discretionary behavior that is not part of the formal job role but indeed does facilitate the smooth functioning of the organization (Applebaum et al., 2003). Brightman and Moran (1999) introduced OCB with a distinct characteristic included in their definition. According to them "organizational citizenship behavior is a voluntary, consistent commitment to the goals, methods and ultimate success of the organization" (p.678). Further, Brightman and Moran (1999) emphasize that for an employee behavior to be a demonstration of OCB, that benefit should fulfill the goals of the organization. In other words, it should be organization centric.

2.2 Antecedents of OCB

Antecedents has been given significant attention in past studies. According to Yadav and Punia (2013) majority of OCB related studies have focused on the antecedents of OCB. Although, Appelbaum and Roy-Girard (as cited in Wei, QU, & Ma, 2012) consider OCB to be "discretionary", the benefits of OCB to organizations has led to the increased interest on antecedents of OCB (Wei et al., 2012).

Many factors such as employee commitment, perceived fairness, organizational commitment and leader supportiveness have been identified as antecedents of the OCB (Wei et al., 2012). When exploring literature, it can be observed that Job Satisfaction is a strong and frequently observed antecedent. According to Puffer (as cited in Wei et al., 2012) the "most well cited conclusions include that there is a positive relationship between employees' job satisfaction and OCB" (P.1245). In addition, leadership behaviors such as transformational leadership, contingent reward behavior, leader role classification, and supportive leader behaviors have been identified as antecedents of OCB (Wei et al., 2012). In a Sri Lankan context, factors such as distributive justice, procedural justice, organizational justice have been considered by Silva and Madumali (2014) as the antecedents of the OCB.

Scholars have categorized antecedents as "Individual", "Organizational", "Task related" and "Leadership behaviors" by observing their relationship with OCB (Alhyasat, 2012; Magdelane, 2014; Podsakoff, MacKenzie, Paine, & Bachrach, 2000). These studies listed employee satisfaction, fairness, organizational commitment, conscientiousness, agreeableness, positive and negative affectivity, employee abilities and individual differences as individual antecedents and task feedback, task routinization and intrinsically satisfying tasks as task related antecedents. They further state that organizational formalization, organizational inflexibility, advisory / staff support, cohesive group, rewards outside the leader's control, spatial distance from leader, and perceived organizational support as the organizational antecedents. Moreover, studies have categorized high performance expectations, intellectual stimulation, contingent reward behavior, contingent punishment behavior, and leader role clarification under leadership behaviors.

The selected four antecedents of this study are Self Esteem, Emotional Intelligence, Job Satisfaction and Transformational Leadership that were initially selected regardless of their categorization. Among the many antecedents that have been observed by scholars it was clear that these four antecedents were very frequently examined under varies circumstances and contexts (Anjomshoa, & Fard, 2016; Anwar, Gani, Fintaine, & Rahman, 2017; Ariani, 2012; Furnham, Eracleous, & Premuzic, 2009; Han & Kakabadse, 2009; Ismaeelzadeh, Khalili, 2017; Khan, Ghouri, & Awang, 2013; Matzler, Bauer, & Moordian, 2015; Mohammad, Habib, & Alias, 2011; Qureshi, Salajeghe & Farahmand, 2014; Shahjehan, Zeb, & Saifullah, 2011; Somayehadabifirozjaee, Abbaspour, & Azizishomami, 2014).

Even though most scholars have not used categorization of antecedents, some scholars (Magdalena, 2014; Podsacoff et. al., 2000) selected antecedents categorically. Magdalana (2014) lists job satisfaction which Smith et al. (as cited in Yadav & Punia, 2013) describe as the strongest forecaster of OCB, as an individual antecedent. Studies also indicate self-esteem and emotional intelligence (EI) as the individual antecedents. Ariani (2012), in his study examines the relationship between Self-esteem and OCB and refers it as a personal/individual attribute. Kim and Kim (2014) examined the relationship between EI and OCB and describe that intelligence as an individual antecedent by referring it as personal intelligence. Podsacoff et al. (2000), lists transformational leadership under leadership style and calls transformational leadership is core of the OCB.

Self esteem and OCB

Rosenberg (as cited in Matzler et al., 2015) describes self-esteem as the self-evaluation done by a person for him/herself. Further in his study Rosenberg (as cited in Matzler et al., 2015) states that a person with self-esteem has self-respect, and thinks of him/herself as a valuable person and appreciates his/her own characteristics. According to literature, self- esteem has been linked with different aspects such as "organizational citizenship, collectivism and propensity" (Qureshi et al., 2011, p.3450). As a result, an additional form of self-esteem is named as "Organizational Based Self-Esteem- (OBSE)" by Qureshi et al. (2011). Bowling et al. (as cited in Matzler et al., 2015) found in their meta-analysis that OBSE had a positive relationship with attitudes and behaviors such as "job satisfaction, organizational commitment, job involvement, in-role job performance, and organizational citizenship behavior" (p.818). Many findings of past scholars justify their findings on the positive relationship between self-esteem and OCB. Ariani (2012) says that people with self-esteem will always want to motivate themselves to become better people and this intention will encourage them to engage in behaviors such as OCB.

EI and OCB

According to Somayehadabifirozjaee et al. (2014), EI refers to the extent people can comprehend and identify their emotional situation properly and their awareness of how to express themselves properly and further, the extent to which they have the ability control their moods. Mayer and Salovey (as cited in Salajeghe & Farahmand, 2014) explained that emotional intelligence is an individual's capability to reflect on their own and others feelings and emotions and distinct emotions and use the understanding about emotions to solve the problem and regulate behavior. Joseph and Newman (as cited in Anwar et al., 2017) observed that EI positively, but Harmer (as cited in Anwer et al., 2017) illustrated that the impact on OCB has been comparatively less observed. Sinha and Jane (cited in Anwar et al., 2017) say that EI has significant relationship with the OCB.

Job satisfaction and OCB

Han and Kakabadse (2009) found that job satisfaction as a person's overall evaluation of physiological, psychological and environmental conditions of the job. Similarly, Warr (as cited in Furnham et al., 2009) describes job satisfaction as the level of happiness a person may gain out of his job role. Bateman and Organ (as cited in Mohammad et al., 2011) argue for a positive relationship between job satisfaction and OCB. In their study they tested the level of job satisfaction employees had and compared it with the ratings these employees received from their supervisors in terms of OCB. They found a very strong relationship between job satisfaction and OCB. William and Anderson (as cited in Mohammad et al., 2011, p. 154) also say that there is a positive relationship between both intrinsic and extrinsic job satisfaction and OCB.

Transformational Leadership

Literature of leadership identifies transformational leadership as one of the two broad leadership areas (Khan et al., 2013) and Bass (as cited in Khan et al., 2013) defines transformational leadership as a "significant performance by the leadership that inspires the followers to prefer the interest of the group upon own self-interest and the leaders take care of the welfares of teams" (p.146). Ching et al. (as cited in Ismaeelzadeh et al., 2016) identified a positive and significant relationship between transformational leadership and OCB. The same significant and positive relationship between transformational leadership and OCB was observed by Piccolo et al. (as cited in Ismaeelzadeh et al., 2016).

3. Research methodology

3.1 Research philosophy and strategy

This study aims to bridge an empirical gap with regard to the relationship between antecedents and OCB in two selected semi government organizations in Sri Lanka. The study is conducted through a quantitative data analysis. All implications and recommendations are derived using an objective factual approach. In other words, conclusion is made purely based on facts discovered. Hence, this study can be introduced as a positivistic quantitative study. In order to answer the research question of this study, data was collected just once or at one point in time. Individuals were the focus of this study. Therefore, the unit of analysis is individual level.

3.2 Research hypotheses and model

First, this study observes the relationship between self-esteem and OCB. According to Colin (1995), if a person places a value on himself for something that he/she believes to be true, that person could be considered to be a person with self-esteem. Past studies identify a positive relationship between Self-esteem and social behavior. According to Afolabi (2014) people with high level of pro social behavior show a significantly high level of self-esteem. He further states that self-esteem expands the potential for self enhancement and thereby will motivate an individual to be involved in pro-social behavior. Whelpley and McDaniel (2016), state that only high self-esteemed employees would have the emotional strength to perform OCB under difficult and challenging circumstances. Based on these findings Hypothesis 1 has been formulated.

H1: Self-esteem has a positive significant relationship with OCB

Second, this study observes the relationship between Emotional Intelligence (EI) and OCB. Chin, Anantharaman, and Tong (as cited in Jena et al., 2014) found EI to be positively related with two dimensions of OCB. Certain other studies have also discovered a positive significant relationship between EI and Pro-social behaviors (Afolabi, 2014). In their study Jena et al. (2014) further states that EI is positively linked with helpfulness. According to them individuals strong in EI would usually tend to engage in behaviors that are beneficial to others. Turnipseed and Vandewaa (2012) in their study found that people with higher EI have the ability to see, understand and handle other people’s emotions very well. Therefore, they concluded from their study that people with higher levels of OCB will engage in helpful behaviors better than people with low EI. Based on these findings Hypothesis 2 has been developed.

H2: EI has a positive significant relationship with OCB

The third relationship observed in this study is between job satisfaction and OCB. When exploring literature there is considerable evidence that OCB is positively related with job satisfaction (Mohammad et al., 2011). In their longitudinal cross-sectional study, Bateman and Organ (as cited in Mohammad et al., 2011) found a positive significant relationship between overall job satisfaction and OCB. Mohammad et al. (2011) supports this finding of the positive relationship between job satisfaction and OCB. Based on these findings Hypothesis 3 has been developed.

H3: Job satisfaction has a positive significant relationship with OCB

The final relationship observed in this study is between transformational leadership and OCB. According to Podsakoff et al. (as cited in Khan et al., 2013) there is a positive relationship between transformational leadership and OCB. Bass et al. (as cited in Rodrigues & Ferreira, 2015) explained that the transformational leaders always encourage their followers to prioritize collective needs over individual needs with the intention of getting them people to achieve the goals of the organization. Then, they tend to engage in the behavior such as OCB that ensure common benefit. According to Rodrigues and Ferreira (2015), transformational leadership indeed has a positive relationship with OCB. Based on these findings Hypothesis 4 was developed.

H4: Transformational leadership has a positive significant relationship with OCB

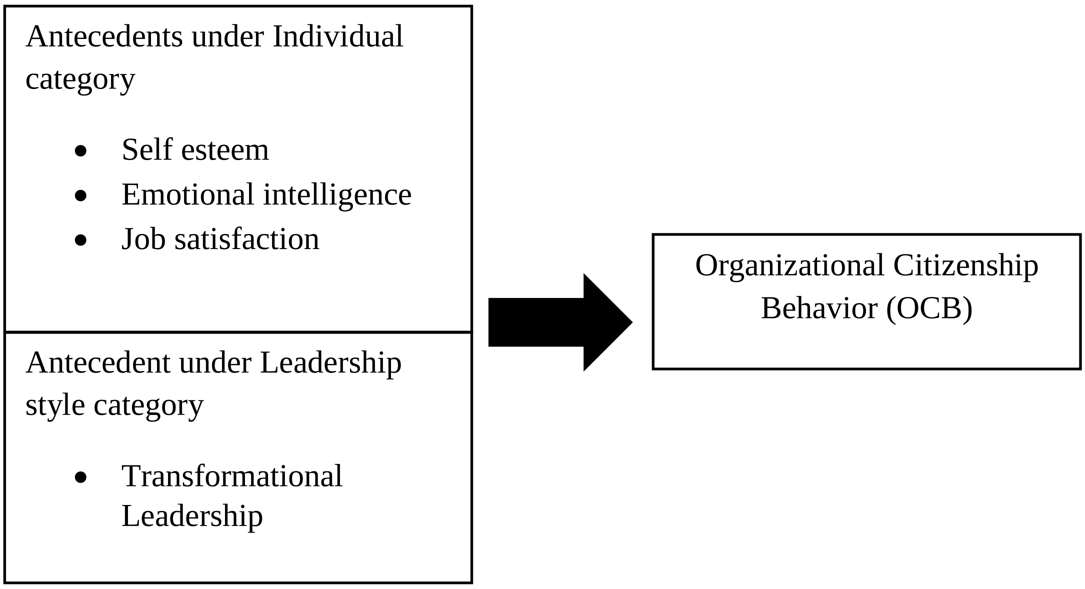

Figure 1: Conceptual model
Source: Author

3.3 Sample of the study

The two-semi government service sector organizations selected for this study was located in the Colombo district of the Western province in Sri Lanka. Therefore, these two organizations represent the total population of the study. These two organizations are particularly selected by considering their size and number of employees employed. Since this study aims to identify OCB in general among the semi government sector employees, employees of these organizations are selected, regardless of their employee category (Executive, nonexecutive). Moreover, probability sampling technique is used as the sampling method of this study.

Preliminary data was collected through a structured questionnaire which assures confidentiality of the responses and the anonymity of the selected population of the sample. 130 (65 x 2) copies of the main questionnaire were distributed with 65 for each organization and 109 completed responses were returned. Accordingly, the response rate was 83.84%.

3.4 Measures

The questionnaire was divided into 10 sections. The first 05 sections were formulated to collect the information about respondents' demographic characteristics such as gender, level of education, tenure period in the current organization, marital status using closed ended statements. Under the section 6, the level of job satisfaction is tested by using 06 items questions that were obtained from Linz (2003) which had been constructed to identify job satisfaction in a Russian context. These items tested how happy employees were in terms of their pay, promotion opportunities, respect and recognition they receive, job security and the working environment and conditions. Section 07 measures the self-reported EI of the employees by using Wong and Law's (as cited in Kearney et al., 2017) EI scale (WLEIS). According to Christie et al. it has been "rigorously tested and validated in previous studies" (as cited in Kearney et al., 2017). Section 08 focuses on the self-reported level of self-esteem by adopting Rosenburg's self-esteem scale (as cited in Matzler et al., 2015). The focus of section 9 is to see how much employees agree with the level of transformational leadership demonstrated by their supervisors. This is the only section that is not a self-reported evaluation. For this section questions were adopted from Bass and Avolio's (as cited in Loon, Lim, Lee, & Tam, 2012) Multifactor Leadership Questionnaire (MLQ Form5X). The 59 items were presented in the style of "Statements" and their level of agreement is tested using "Likert scale". The scale is a 5-point scale with 1= Strongly disagree and 5 = Strongly agree.

4. Analysis and results

4.1 Participant profile

Out of 109 participants, 61.5% were female while 38.5% were male employees. In terms of the service period 17.4% of the sample had less than 5 years of work experience while 9.8% of the participants had a service period between 5-10 years, 39.4% of the participants had a service period between 10-20 years while 33.9% of the participants possessed more than 20 years of experience. In this study, the level of education (highest education qualification) held by participants were also inquired. 7.3% of the participants held ordinary level as their highest educational qualification while 30.3% of the participants had advanced level as their highest educational qualification. 20.2% of the participants had diploma as their highest educational qualification. 21.1% of the participants were bachelor degree holders while 21.1% of the participants were master degree holders. Civil status of the participants was also inquired. 78.9% of the participants stated that they were married while 21.1% of the participants stated that they were unmarried. Further, 44% of the participants were from the executive category while 56% of them were from the Non – executive category (Refer Appendix II-frequency Tables).

4.2 Descriptive statistics

Table 1: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Job Satisfaction	109	1	5	3.59	.975	.951
Emotional Intelligence (EI)	109	3	5	4.31	.470	.221
Self Esteem	109	2	4	3.25	.314	.099
Transformational Leadership	109	1	5	3.91	.879	.772
OCB	109	3	5	4.39	.382	.146
Valid N (listwise)	109					

Source: Research data

According to the above Table 1, EI is the antecedent that has the strongest connection (M=4.31; SD =0.470) with OCB. The second strongest connection with OCB is shown by transformational leadership (M =3.91; SD =0.879). Job satisfaction is the antecedent that has the third strongest relationship with OCB (M = 3.59; SD = 0.975). Out of the four antecedents, Self-esteem has the lowest level of connection (M = 3.25; SD = 0.314) with OCB. On an overall basis all four factors show a strong connection with OCB. The mean value of OCB (M = 4.39; SD = 0.382) indicates that, on an overall basis the level of OCB in the semi-government sector is high (M > 2.5).

4.3 Correlation analysis

Table 2: Correlations

		Job Satisfaction	Emotional Intelligence	Self Esteem	Transformational Leadership	OCB
Job Satisfaction	Pearson Correlation	1	.206*	.081	.517**	.196*
	Sig. (2-tailed)		.032	.404	.000	.041
	N	109	109	109	109	109
Emotional Intelligence	Pearson Correlation	.206*	1	.302**	.107	.516**
	Sig. (2-tailed)	.032		.001	.270	.000
	N	109	109	109	109	109
Self Esteem	Pearson Correlation	-.081	.302**	1	.004	.406**
	Sig. (2-tailed)	.404	.001		.971	.000
	N	109	109	109	109	109
Transformational Leadership	Pearson Correlation	.517**	.107	.004	1	.206*
	Sig. (2-tailed)	.000	.270	.971		.032
	N	109	109	109	109	109
OCB	Pearson Correlation	.196*	.516**	.406**	.206*	1
	Sig. (2-tailed)	.041	.000	.000	.032	
	N	109	109	109	109	109

**. Correlation is significant at the 0.05 level (2-tailed).*

***. Correlation is significant at the 0.01 level (2-tailed).*

Source: Research data

4.4 Self - esteem and OCB

Results of the Table 2 illustrates that the strength of association between Self-esteem and OCB is low and positive ($r = 0.406 < 0.5$) with the significant relationship between self-esteem and OCB as $P < 0.05$. ($P= 0.000$). The coefficient of variation (r^2) between Self-esteem and OCB is 0.165 ($0.406^2/r^2$). Hence, 16.5% of OCB's variation can be explained by its relationship with Self-esteem.

4.5 EI and OCB

According to the results in Table 2, strength of the association between EI and OCB is strong and positive ($r = 0.516 > 0.5$). It is evident that there is a significant relationship between EI and OCB as $P < 0.05$. ($P= 0.000$). The coefficient of variation (r^2) between EI and OCB is 0.267 ($0.516^2/r^2$). Hence, 26.7% of OCB's variation can be explained by its relationship with EI.

4.6 Job satisfaction and OCB

According to the Table 2, the strength of association between Job Satisfaction and OCB is weak and positive ($r = 0.196 < 0.5$). It is evident that there is a significant relationship between self-esteem and OCB as $P < 0.05$. ($P= 0.041$). The coefficient of variation (r^2) between Job satisfaction and OCB is 0.04 ($0.196^2/r^2$). Hence, 4% of OCB's variation can be explained by its relationship with Job satisfaction.

4.7 Transformational leadership and OCB

According to the Table 2, the strength of association between Transformational leadership and OCB is weak and positive ($r = 0.206 < 0.5$). It is evident that there is a significant relationship between self-esteem and OCB as $P < 0.05$ ($P= 0.032$). The coefficient of variation (r2) between Transformational leadership and OCB is 0.04 ($0.04^2/r^2$). Hence, 4% of OCB's variation can be explained by its relationship with Transformational leadership.

5. Discussion

This study examined three individual antecedents and one leadership style antecedent and their relationship with OCB. Self-esteem, EI and job satisfaction was considered as individual factors and Transformational leadership was considered as the only Leadership style factor.

Self-esteem indicates a positive ($r = 0.406$) and significant (P-value < 0.005 / P-value = 0.000) relationship with OCB. This finding is similar to what was observed by Devin et al. (2012) in their study conducted among school teachers. Devin et al. (2012) found Self-esteem to be significant (P- value < 0.05) and to be positively related to OCB ($r = 0.716$). Ogunleye et al. (2014) conducted a study among the secondary school teachers in Nigeria and found a significant and positive relationship between Self-esteem and OCB. As mentioned previously, self-esteem is the self-opinion about a person's self-worth. People also tend to work in a way that they could maintain the self-worth they believe they have. Therefore, the reason for Self-esteem being positively and significantly related to OCB can be attributed to the following reason. When a person is more likely to believe in themselves as being important and worthwhile, they will tend to engage in behavior patterns that show who they are and help them maintain their self-opinion about their self-worth.

The second individual factor observed in this study was EI. According to the statistical analysis of this study EI is also positively ($r = 0.516$) and significantly (P-value <0.005/ P-value = 0.000) related to OCB. The similar positive ($r = 0.502$) and significant relationship (P-value < 0.05) between EI and OCB was observed by Salajeghe and Farahmand (2014) in their study. Similarly, Kahdooee et al. (2014) also observed a positive ($r = 0.714$) and significant (P- value < 0.05) relationship in their study conducted among employees of a manufacturing company. Antony (2013) also observed a positive ($r = 0.470$) and a significant (P-value < 0.05) relationship between EI and OCB among Indian corporate employees. As stated before, EI refers to the ability a person has in identifying, managing and regulating their emotions themselves and in their relationships. Since people with high EI can better understand their need for help and others need for help, they may tend be more involved in helpful behaviors such as OCB.

The third individual factor observed on this study is job satisfaction. According to the results, job satisfaction is positively ($r = 0.206$) and significantly (P-value < 0.005/ P-value = 0.0041) related with OCB. A positive and significant relationship has previously been observed by Mohammad et al. (2011) in their study. They found a positive ($r = 0.223$) and significant relationship between intrinsic job satisfaction and OCB while they also observed a positive ($r = 0.247$) and significant relationship between extrinsic job satisfaction and organization-based OCB. The reason for this positive significant relation could be that the people are happy with the jobs, they engage in behaviors that would enable them to reciprocate, similar to what happens in social exchange theory.

The final and only leadership style observed in this study was transformational leadership. According to the results of the statistical analysis transformational leadership is positively ($r = 0.206$) and significantly (P-value < 0.005/ P- value = 0.0032) related with the OCB. A similar positive and significant relationship between transformation leadership and OCB was observed by Ismaeelzadeh et. al (2016) in their study that was conducted among physical education teachers. Rodrgues and Ferreira (2015) in their study that was conducted to identify the impact of transactional and transformational leadership on OCB found that transformational leadership had a positive and significant relationship with OCB. This positive and significant relationship can be attributed to the fact that transformational leaders have the ability to influence people to engage in OCB, and by being transformational leaders they encourage their employees to engage in helpful behaviors such as OCB as a way to reciprocate to their leader and organization. Transformational leaders set examples, attitudes and behaviors that exceed individual interest according to Eboli (as cited in Rodrigues & Ferreira, 2015, p. 500). Hence such behaviors can encourage employees to do the same by engaging in pro social behavior regardless of the personal cost involved.

One objective of this study was to find out the overall level of OCB in the selected two semi government sector organizations. According to the results of the statistical analysis carried out, the two organizations show a high level of OCB with the mean value of 4.39.

6. Findings and implications

6.1 Key findings of the study

Hypothesis I of this study proposed a significant, positive relationship between self-esteem and OCB. The correlation coefficient of this study confirms the positive relationship between self- esteem while it further confirms the statistical significance between the two variables. Therefore, this indicates that hypothesis I can be accepted. Hypothesis II of this study proposed a positive and significant relationship between EI and OCB. The findings of this study confirmed the positive as well as the significant relationship between the two variables. Therefore, hypothesis II can be accepted.

Hypothesis III proposed a positive and significant relationship between Job satisfaction and OCB. While the findings confirmed that, in a semi government context, job satisfaction was indeed positively related to OCB, they also confirm the significance between the variables proposed in the hypothesis III. Therefore, it indicates that hypothesis III can be partially accepted. Hypothesis IV proposed a positive and significant relationship between transformational leadership and OCB. Findings of this study confirm the positive relationship as well as the significant relationship between the variables proposed in hypothesis. Therefore, this indicates that hypothesis IV can be accepted.

In conclusion the study found that self-esteem, emotional intelligence, job satisfaction and transformational leadership all show a positive and significant relationship with OCB. On an overall basis it could be concluded that, if employees have a high level of self-esteem, high level of emotional intelligence, high satisfaction with their job, and finally if they encounter transformational style of leadership when working with their supervisor, the tendency of them engaging in pro social, voluntary, helpful behaviors such as OCB is very high.

6.2 Implications

As mentioned previously in this study many past scholars have identified OCB as a behavior pattern that benefits an organization. It is also a behavior pattern that does not require recognition. In other words, it is cost free to an organization. If OCB is encouraged and an OCB culture could be created the organization will gain benefits free of charge. This study identifies four factors that are positively predicting OCB. Organizations can use the findings of this study and ensure that the independent variables discussed are strengthened and thereby OCB is encouraged within their organizations. Since OCB is context specific, maybe the findings cannot be applied as they are, to non-semi government organizations but still this could provide some direction. Semi government organizations can gain direct benefit out this study. By strengthening the antecedents discussed under this study, in an organization, not only can managers enhance OCB but they could create a good leadership culture, a happy team of employees and a group of people with healthy mentality and emotional intelligence. This would lead not only to OCB but other benefit aspects that do not come under OCB.

6.3 Limitations and recommendations for future research

This study was conducted in a Sri Lankan semi government context. The context of observation further narrows down to the Colombo district of the Western province. Hence the findings are very context specific. Given that the nature of OCB is context specific, as outlined in Chapter 02 of this study, the global application of the findings cannot be expected. Further, except transformation leadership all three variables were tested based on self-evaluation of semi government employees. Therefore, the responses could include bias and dishonest claims of certain respondents. Another limitation of this study is that directional relationship with independent and dependent variables have been tested without considering any moderator or mediator. With moderators and mediators, the results obtained in this study might be more credible and rationale. The dependent variable of this study, OCB is a five-dimensional construct. But under this study the relationship between the independent variables and those unique dimensions were not test, but instead over all OCB was measured. Moreover, this study was conducted among employees of two semi government organizations. Therefore, its extent of representation of the entire semi government sector is quite questionable.

As recommendations for future studies, few suggestions can be made. OCB can be tested in different contexts within the Sri Lankan geographical boundaries, so that those contextual findings can be applied appropriately. Further, studies can be carried out with various moderators and mediators to see what factors could strengthen the relationship between the independent variables discussed under this study and OCB. As mentioned before independent variables and overall OCB was measured. But future studies can be directed at identifying how various antecedents affect each individual dimension of OCB.

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Career development challenges: Life stories from Sri Lankan medical officers

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Abstract

This study was conducted with medical professionals to identify barriers which hinders their development and why they are reluctant to enter to the postgraduate field of medicine. The sample of the study consisted of 8 medical officers attached to government hospitals in Sri Lanka. The data collection process was done through semi-structured in-depth interviews and thematic analysis was used to analyze the gathered data. It is observed that the number of consultants in the field of medicine is less in comparison to the total number of medical graduates in the field. Therefore, in this paper it is questioned why medical graduates show greater reluctance to enter in to the postgraduate field of medicine. The study identified barriers which medical officers face in attempting to enter to the postgraduate path which leads to becoming a consultant. The research categorized the identified findings as structural, individual and work-related factors which prevent career progression of medical officers. The findings of this study would be useful for policy implications.

Keywords: Career Development; Challenges of Career; Medical Officers; Qualitative Inquiry; Sri Lanka

1. Background

Employee careers play a vital role in the dynamic business world (Adekola, 2011). Employees being the most treasured asset in an organization need a longstanding stabilized career path which would reciprocate as a win-win situation for both the employees and the organization (Puah & Ananthram, 2006). The importance of career and its progression has been linked with human life. A person's career experience gives an overall indication of the development of the career that individual is engaged in and it indicates the inter connectedness between life and career (Chen, 1998). The book 'Choosing a vocation' by Frank Parsons published in 1909 identifies the choice of the right career is as important as choosing your life partner as a person's whole life would be devoted towards that profession or occupation that individual is engaged in (Woolf & McManus, 2010).

When a career plays an important role in an individual's life, it is essential to look in to how a career progresses and the influential factors which affects its progression. In relation to the factors which influence on career progression to

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hindering the developmental procedure, demographics, work related factors and career patterns are observed (Conlon, 2004). In considering the profession of medicine the career choices which medical officers make are vital to the development of the profession. The progression in the medical career has an impact on the medical workforce. In order to meet the demands of the community in terms of health care, there should be an assurance in planning of medical workforce which ensures a balance distribution of doctors across a wide range of specialties (Australian Medical Workforce Advisory Committee, 2003 as cited in Laurence & Elliott, 2007).

The main challenge faced by a country is in preparing a workforce that is able to attain the health objectives of a country (The World Health Report, 2006 as cited in De Silva, Perera, Gunatunge, & Tantrigoda, 2008). The workforce distribution should be balanced in terms of the capabilities, individuals perceive and in fair distribution in terms of numbers (De Silva, Perera, Gunatunge, & Tantrigoda, 2008). In concentrating on the workforce dynamics, it is essential to be knowledgeable about the time which individuals move in to the workforce, the time period they engage in the workforce and the time of retirement (De Silva et al., 2008). As per the College of Medical Administrators of Sri Lanka report, "in Sri Lanka only around 15% of doctors are consultants, in other countries this number is much higher. In the USA more than 90% of doctors end their career as consultants. In UK and Australia there are similar trends" (Dissanayake, 2012, p.2).

In Sri Lanka, the medical workforce in different specialized areas is few in percentage. In addition, comparison to the number graduating, the amount of consultants in the field of medicine is less. As per the university grants commission statistics, the total graduate output is reported in the year 2015 as 29,545 from all state universities and higher educational institutions established under the universities act and the total of postgraduate output is reported as 7,513 (Sri Lanka University Statistics, 2015). Out of the total graduate output, 20.3% of graduates engage in postgraduate studies in their field of preference but with regard to the field of medicine the percentage qualifying in to the postgraduate curriculum of medicine or in other terms the Doctor of Medicine (MD) is just 3.57% (Sri Lanka University Statistics, 2015) of the total number of graduates who enter to the medical field. Therefore, in this paper we question, why are medical officers reluctant/do not desire to do postgraduate studies which is required for career progression?

Thus the objective of this research is to identify factors those prevent career progression of medical officers and why they are reluctant to enter to the postgraduate field of medicine in Sri Lanka. This study extends the empirical range of explanatory theories and therefore Section 2 looks at different theoretical concepts on challenges for career progression. The paper then goes on to explain the case study and methodology in Section 3. Section 4 presents the data and analysis. The paper concludes in Section 5.

2. Literature review

Career progression depends on many factors. Several theories have emerged to explain the process whereby individuals make career choices. In some of the theories of career progression the emphasis on person job-fit plays a critical role where an individual's inimitable ideas, values and skills are harmonized with the job skills (Dawis & Lofquist, 1984; Holland, 1997 as cited in Duffy & Dick, 2009). The emphasis on social learning and cognitive theories has also reached a progression in the past (Duffy & Dick, 2009). The social cognitive career theory (SCCT) symbolizes to understand forms of interests and choices of people which they make in order to achieve varying levels of success in scholastic and professional endeavors (Lent, Brown, & Hackett, 1994).

In an attempt to conceptualize the nature of an individual's life career development, three explanations of career was stated as "career as a process in life, career as meaning making and career as an individual agency" (Chen, 1998, p. 437). Viewing career development or progression as an individual agency generates the meaning that a person by his or her own, is fully engaged in the process of career development and that person alone becomes the self-director of his or her career (McCarthy & Garvan, 1999). Another study states that career progression is an assortment of numerous individual experiences including the growth in salary, development of the job to the next positions, job opportunities elsewhere, recognition and the escalating status (Doucouliagos, Ulubasoglu, & Hone, 2007).

In the medical career, the postgraduate education which is acquisition of knowledge and skill and practice of medicine has a valuable impact on career development. Some doctors would not consider postgraduate education or specialization as they still have opportunities in career development in a manner they perceive, without gaining further academic qualifications (Miedzinsk, Davis, Al-Shurafa, & Morrison, 2001).

Smith, Lambert, and Goldcare (2016) have surveyed the factors influencing junior doctors' choices of future specialty. It has shown that the enthusiasm and commitment for the specialty, domestic circumstances and working hours were considered more important than prospects for promotion and financial benefits. According to the literature it highlights that young doctors value both work life balance and personal fulfillment at work more highly.

In relation to the factors which make an influence on career progression to draw back the developmental procedure, demographics, work related factors and career patterns are observed (Conlon, 2004). Careers are influenced mainly by sexual characteristics and family's position within a hierarchical social structure in the early years of development (Osipow & Fitzgerald, 1996 as cited in Conlon, 2004). The segmentation between the factors which encourage career progression and factors that hinders career progression could not be segregated precisely, as a factor which motivates one individual could be a factor which demotivates another individual (Duffy & Dick, 2009).

Although, the factors influencing may vary subjectively, the influence itself creates a huge impact on the progression of a career.

In the field of medicine there are situations where female medical officers are discriminated on the mere grounds of gender. Most of the health systems show horizontal and vertical segregation of female medical officers (Poole, 2017). Female medical officers are over represented in general specialties and underrepresented in surgical and high leadership positions (Poole, 2017). Some researchers have found that although there is equal opportunity to study for both males and females, the female number gradually dwindle when considering post-doctoral stages and in higher positions which has greater responsibility (Ramos, Palacín, & Márquez, 2015).

Past literature highlights that, out of stressful occupations medical officers are considered to be dealing with highest levels of stress (Cooper et al., 1988 as cited in Antoniou, Davidson, & Cooper, 2003). Medical officers deal with humans rather than equipment (Caplan et al., 1975 as cited in Antoniou et al., 2003) which is the fundamental factor which has a greater impact on life (Rees, 1995; Antoniou, 2001 as cited in Antoniou, Davidson, & Cooper ,2003). A study conducted in England, Scotland and Wales found out that long working hours constantly played a negative role with the performance (Wilkinson et al., 1975 as cited in Antoniou et al., 2003). As per past literature, stress has a negative impact on performance and career, the researcher proposes that additional amount of stress causes medical officers to refrain from entering into postgraduate career as dealing with present obligations needs a greater effort of time and sacrifice.

In considering about medical officers the factors influencing their career progression varies by the career stage they are in (Lambert, Smith, & Goldcare, 2016). The factors affecting the career choices of the medical officers depends on the level of their seniority in the field of medicine. In the profession of medicine clinicians are known to be as endangered species as he noted rapid declines over the last two decades of medical officers entering in to postgraduate path (Ogdie, Shah, Makris, Jiang, Nelson, Kim, & Barg, 2015). Nathan and Varmus (2000) as cited in Areephanthu, Bole, Stratton, Kelly, Starnes, and Sawaya (2015) stated that contributing factors that leads to the decline in physicians over the last decade could be categorized as, the length and cost of clinical training, increased convolution of clinical and basic science, burdensome regulations, long working hours combined with clinical responsibilities and inadequate enthusiasm.

The demands from different specialties and the training which one needs to undergo should be taken in to reflection in the choice of a specialty (Rogers, Creed, & Searle, 2012). A study conducted in Australia found out that "ophthalmology, surgery, dermatology, anesthesiology and intensive care medicine were ranked as the most difficult specialties, and general practice, public health medicine, occupational medicine, medical administration, and rehabilitation medicine as the least difficult" (Rogers et al., 2012, p. 199). At the inception, the field of clinical emergency medicine had an upward trend of doctors entering due to the various reasons such as negotiable working hours and the exposure they receive but later on, the factors changed due to heavy work load and mainly higher levels of stress and burnout which compelled doctors to leave the field of emergency medicine (Doan-Wiggins, Zun, Cooper, Meyers, Chen, & Force, 1995). Having a better understanding about the factors which influence medical officers' career choices and the variability of attitudes in choosing different specialties is an important factor to be considered following the aspect of career progression (Lambert, Smith, & Goldcare, 2016).

In summary, this section examined the nature of career progression and reasons identified for prevention of career progression. The amount of physician's entering in to a postgraduate career depends on doctors' career choices and it varies among different specialties they choose (Smith, Lambert, & Goldacre, 2015). Therefore, Sri Lanka will be a good case study to understand why Sri Lankan medical officers are reluctant/do not desire to do a postgraduate study which is required for career progression.

3. The context: Sri Lanka

The medical graduates who enters to the health sector workforce in Sri Lanka is divided in to two categories namely graduates from state universities and foreign universities (De Silva, et al., 2008). All medical officers in order to practice as a licensed medical practitioner, need to obtain the full registration with the Sri Lanka Medical Council (SLMC) and the full registration would be granted by the SLMC, for local graduates who successfully completes their one year internship program and for foreign graduates after the successful completion of the Examination for Registration to Practice Medicine (ERPM) and with the accomplishment of one year's internship period (De Silva et al., 2008).

The pathway an individual should follow in order to obtain postgraduate qualifications after completion of the MBBS degree is as follows. The sole institution which provides the postgraduate training to the medical officers in Sri Lanka is the Post Graduate Institute of Medicine (PGIM) of the University and the board certification to be recognized as a specialist by the SLMC can be attained only through the PGIM training programs (De Silva, Liyanage, Silva, Jayawardana, Liyanage, & Karunathilake, 2013).

To be a qualified specialist in Sri Lanka, medical officers need to pass the selection examination in the choice of their specialty before commencing the training at the PGIM as a trainee/registrar and afterwards a second examination is held in the completion of two to four years of basic training depending on the specialty they choose (De Silva et.al, 2013). Trainees who pass the examination are entitled to go through an advanced training as senior registrars. In the completion of the advanced training the senior registrars have to undergo foreign training for a period of 1-2 years to be board certified as a consultant in the relevant fields (De Silva et.al, 2013).

4. Research method

This study was designed to gain in-depth understanding about the barriers which hinders the medical officers' career progression in the field of medicine. Qualitative research approach was used to meet the objective of the study. The research method involved the examining of the medical officers who have entered to the profession and who are in the period of deciding to enter in to postgraduate studies.

The sample consisted of medical officers who graduated in the years of 2011 and 2012 in both genders in equal numbers. 8 participants were interviewed using semi structured in-depth interviews to address the research objectives. Among the 8 participants 4 females (2 married and 2 single) and 4 males (2 married and 2 single) equally participated. The main objective of selecting the medical officers who graduated in 2011 and 2012 is due to the reason of them being in the stage of entering in to the postgraduate path after their post intern appointment. These medical officers were contacted on snowballing effect and the station they work is an independent factor as to the decisions they make in considering the fact of entering in to the postgraduate pathway. Therefore, the findings of this study could be generalized to all Sri Lankan Medical Officers.

Initially, individual participants were contacted via mobile and an appointment was made at the convenience of the participants who were at reach to the researcher, and one on one interviews were conducted. First, permission was sort to conduct the interview and the consent of the participants were taken to participate in the interviews. The details regarding the barriers they face concerning the postgraduate career of medicine were derived from semi-structured, in-depth interviews. All the interviews were recorded under the permission of each interviewee. The researchers strictly adhered to the ethical considerations which are accepted in conducting research in Sri Lanka.

Based on the thematic analysis the researcher derived codes and themes by reading every transcription. Initially 40 codes were generated and later on it was reduced to nine themes. The nine themes derived were divided in to three main categories named as individual, structural and work related factors which prevents medical officers entering in to the postgraduate career. In analyzing the data, the researchers identified career progression as the core category and other three categories were identified as sub-categories.

5. Data analysis and presentation

In identifying the reasons why medical officers are reluctant to enter in to the postgraduate path the research categorized the derived data in to three sub sections named as structural, individual and work related factors which hinders their progression. The sub sections consist of supportive sections and each and every sub category is provided with evidence from the gathered data to identify the factors which becomes a barrier to medical officers in progressing to specialties in their field of preference.

5.1 Structural factors

In identifying the factors which become a barrier to progress into a specialty in the field of medicine the structure which leads to the pathway of the postgraduate career have many barriers which demotivate medical officers to a greater extent. Based on the collected data, the researchers were able to identify three segments of barriers which are the tough screening examinations, training period and the number of attempts in the exams which has an adverse effect on the placements of medical officers. The following sections elaborate on the structural barriers which directly becomes a factor to refrain from progressing in to a medical specialty to end up becoming a consultant in a stipulated field.

The screening examination

In the postgraduate career in medicine to enter to a specialized path way there are screening exams held to select the best candidates who has the potential to become consultants in that specialized area. Some specialties have more than 2 screening examinations and in the failure of one exam the entire examination is considered as failed and there is no mechanism that only the failed examination could be repeated. In some specialties a candidate needs to pass the diploma related to that field and then enter to the postgraduate path. Only very few candidates are selected from these examinations and they are highly competitive in nature.
Selection exam is a barrier, I wanted to become a microbiologist! In microbiology, 1st I have to do the diploma, then only I have to work as a registrar in microbiology. The exam is only held once per year. If I fail the exam, I will have to wait for another year. (Participant 7, Male, 32)

Another participant elaborated on the examination procedures as mentioned below.
There is a written exam and a viva. Although you pass the exam if you fail the viva then the whole examination is considered as fail. You just can't repeat the viva again. The exam is only held once per year. And if I fail the exam I will have to wait for another year (Participant 1, Female, 32)

The examination structure itself has barriers where some specialties has only one selection examination per year and in the case of failing the examination a candidate will have to wait till the next examination is held.

Training period

Some of the specialties that the participants mentioned have a long training period and although they had the passion to specialize in that particular specialty, the training period they have to engage becomes a demotivating factor.
When I was studying, I dreamed to become a hematologist. I found out that hematology course goes for 7 years so to become a consultant. I have to dedicate a long duration of my life. When I become a consultant my children will be doing Ordinary Level examinations. So I don't want to waste my time

constantly studying and at the end sometimes there is no much difference being a grade 1 medical officer and a consultant. (Participant 6, Female, 32)

The attempts of examinations

The researchers from the data gathered identified a relationship between the numbers of attempts in examinations has with the placements (hospitals) one receives.
As one participant explained,
If I pass in the 1st attempt I will be higher in the list, but if I pass in the 3rd or 4th attempt I will be in a low position in the list. (Participant 5, Male, 31)

Placements

Placements are known as the hospitals where medical officers are being placed or attached to work. The placements happen based on the merit order of the final MBBS examination marks (Personal communication). If any medical officer attempts the postgraduate examination, he/she will be placed in teaching hospitals based on the marks obtained in the postgraduate examination. All participants in the interviews mentioned that placements become a major barrier for them in attempting to enter into postgraduate studies as the appointment will be in rural areas and their reluctance is shown in the below mentioned statements.

We are placed on the merit list of the postgraduate exam. Our work station is allocated according to the merit list. So I have been in XXX (remote areas), for 2 years and I don't want to go again like that. As I mentioned my husband is doing postgraduate studies and after the completion …he has to go to rural areas again, I myself should look after my family and parents. (Participant 1, Female, 32)

A similar view point was stated by another participant regarding the placements.
I wanted to become a surgeon but if I attempt I will have to work in places like XXX and XXX (remote areas). (Participant 3, Male, 32)

The placement depends on the position you are in the merit list. If you are higher in the merit list you can have your choice, you can select out of the given stations and go to that station, but if you have a low rank you have to accept the remaining station. (Participant 6, Female, 32)

All the participants mentioned that the thought of placements make them feel demotivated as they have to be separated from their family and kids and the commitments they have done thus far has led them to a position where they are compelled to be with their family members rather than attempting to enter in to postgraduate studies. It is evident that placements become a barrier for medical officers in entering in to postgraduate studies.

It is clearly evident that all factors mentioned above play a significant role in demotivating medical officers who are willing to engage in postgraduate studies. Although structural barriers have not been mentioned to a greater extent in literature it's vital to draw the attention to the above mentioned factors such as the examination procedure and the restrictions on the number of doctors entering in to the postgraduate career which results in a lack of future expertise labor force who will be consultants in different fields of specialties.

5.2 Individual factors

In concentrating about the individual factors which hinders the progression of the medical officers' the below mentioned categories were identified.

Domestic circumstances

Sri Lanka being a society of male dominance and traditions taking place in every circumstance which occurs, the research identified how the domestic circumstances becomes a barrier to medical officers in relation to their career aspects. All the female medical officers stated that they need to dedicate their time towards their children and parents as they are mothers and daughters apart from their professional life and reluctance was shown in considering the matters regarding the postgraduate exams as a major importance was given to family commitments.

Being a woman itself ads a lot of responsibilities. As an example I can't go far away to distant places thinking about my children, it would disturb their education and my parents' livelihood…if I'm doing postgraduate studies and I will have to go to distant hospitals so that will be very unfair according to my belief for my family. (Participant 1, Female, 32)

Irrespective of the gender male medical officers also elaborated the need of being with their families and the researcher found it interesting to see apart from the social norms that males too were concerned about being with their families.

Actually I want to be with my family, if I enter to the postgraduate I will have to be separated from them as I have to travel to faraway places. My 1st concern is on my family. (Participant 3, Male, 32)

The above mentioned facts prove that the domestic circumstances suppressed the need of medical officers engaging in postgraduate studies. The participants were more committed towards their families and elaborated that they were separated from their families during their undergraduate period, internship period and post internship in the medical career and highlighted that it is essential for them to be with the family members apart from gaining academic qualifications.

Spouse's profession

The research identified when both the partners in the family are in the medical profession the female partner acts conservatively by supporting her spouse to achieve academic qualifications by sacrificing her own career path. If a partner has entered into postgraduate studies the influence on the spouse's professional development was identified and that influence has a negative impact on the other spouse's career development. The female partner is compelled to refrain from entering into the postgraduate path as the family commitments comes first. Medical officers married to non-medical professionals do not face situations as such.

My husband has entered in to postgraduate path and I myself don't like to go through it, and from my husband's point of view, he also doesn't like me engaging in postgraduate studies because ultimately there will be no life. (Participant 1, Female, 32)

Social norms and gender stereotypes

In the field of medicine gender stereotypes were elaborated to a greater extent by the participants based on different specialties. The representation on some specialties was dominated by a majority of males and female numbers were a handful. A majority of females were represented mainly in general specialties and a low percentage was represented in surgical and other labor intensive specialties but the number has increased slightly in the current context in comparison to the early years.

One participant elaborated on the slight growth of the female numbers in the male dominant specialties in the field of medicine.

In the recent past there have been female surgery registrars, female VOG's, but not much. It's better than the past. When we were medical students I knew only one VOG. There are 5/6 VOG's around the Colombo region. Surgeons I knew about 4/5, but there were no female orthopedic surgeons, but now we have 1 female orthopedic surgeon. (Participant 3, Male, 32)

Further medical officers stated that when it comes to higher positions in the medical administration field female representation is low in number.

About medical administration also Director General of health services, deputy Director General of health all are males. Females might have been there but higher posts are all males. (Participant 4, Male, 33)

The past literature also highlights that the participation of females gradually decline when it comes to higher positions with greater responsibility and it is also evident by the statements provided by the participants.

In considering about the societal norms and how the society perceives a woman and her career and the roles and responsibilities attributed to the womanhood hinders the career progression of females. All female medical officer agreed to the fact that the role they have to play as a woman in the society acts as a barrier to progress in their postgraduate career.

Being a female actually there is a problem. After having kids, we need to play a role as a mother and females have a major role to play in her family with *their kids. Kids, they always need the attention of the mother. So actually I think it's quite difficult to do postgraduate studies for females than a male.* (Participant 2, Female)

It is evident with all the above mentioned statements that gender stereotypes and how the societal norms have a negative impact on career progression. Especially, female medical officers themselves agree that the roles they have to play and the priorities they have to make creates a barrier to progress and male medical officers too agreed that gender stereotypes become a barrier in the career progression.

5.3 Work related factors

The research was able to identify few factors related to the working environment which medical officers are engaged in and how the environment has an impact on their postgraduate career choices. The stressful work environment and the support of seniors and colleagues are two sub categories which were identified from the gathered data and the following section would elaborate on the work related factors which acts as a barrier in attempting to enter into the postgraduate path.

Stressful work environment

The participants elaborated that based on their working environment the stress levels vary and some are engaged in highly stressful working environments and that fact alone itself demotivates them to enter in to postgraduate studies. It is a well-known element that as medical officers' deals with lives of patients there is a level of stress to a certain extent but the research was able to identify different dimensions of stress levels depending on the work environment medical officers are placed in. The below mentioned statements are in evidence for the level of stress the participants undergo daily and about the time period they have to dedicate for the work.

Stressfulness is there to the maximum level, as an example after we anesthetize a patient the surgeon will come and do the surgery but ultimately the anesthetists are the responsible people to recover the patient whatever happens during the surgery. So that is very stressful. (Participant 1, Female, 32)

Majority of the medical officers elaborated that they have to engage in the hospital duty beyond the stipulated time period which makes them rethink about the decision regarding postgraduate studies.

I'm working at ICU dengue unit. It's a shift duty. 6 hour shift but irrespective of the number of doctors working in that unit we need to care about our patients. Always we need to have two doctors for 24 hours. Therefore, there is no fix time table for doctors. At the moment I'm working 8 hours per day although we are supposed to do a 6 hour shift. The work is not stressful in that unit but the problem is that we have to spend more time in the hospital and it reduces my time to engage in postgraduate studies. (Participant 2, Female)

Participants were passionate about the area which they work, due to the greater engagement and the time which they need to dedicate more makes it a demoralizing factor to engage in the postgraduate career. For example,
I like anesthesia very much but I don't attempt to go in to postgraduate studies because there is no time line per day as to when a surgery will finish. So as an example I have seen some postgraduate trainees in anesthesia who starts off surgeries from morning engages in them till late night. So I don't want to attempt to do something like that. (Participant 1, Female, 32)

Some of the participants mentioned that the environment the medical officer placed based on the merit order are not in their field of preference and if they are planning to enter to the postgraduate pathway in a totally different specialty it would be a factor which demotivates them.

If you are planning to do your higher studies in one area but working in a totally different area, that will hinder your progression. As an example if you are trying to become an anesthetist and you are working in a pediatric ward… (Participant 3, Male, 32)

It is evident that the work environment makes a greater impact on the medical officers' career choices and the difficulties they face in balancing their work in considering matters related to postgraduate studies.

The support of seniors and colleagues

It was identified that a majority of participants had good support from the seniors and colleagues and the encouragement was up to an extent that it persuaded them to enter in to the postgraduate career. Although there was support from seniors and colleagues the participants were reluctant to enter in to the postgraduate career.
They are guiding and always motivating us, like monthly sometimes even more than that, once in a fortnight I get a reminder from my consultant "how about your postgraduate studies?" so likewise there is a constant push, but I am the one who is not attempting to do a specialty. (Participant 4, Male, 33)

It is evident that although there is constant motivation from the seniors the participants are reluctant to enter to the postgraduate path way although they have the potential to do so. The researcher was able to identify that although the work related factors do not act as a major barrier compared to the other factors which was mentioned at the initial stage the researcher identified that the work pressure to a certain extent has an impact on the postgraduate career of medical officers.

6. Social cognitive career theory and individual career development

Social cognitive career theory (SCCT) formulated mainly three dimensions of career development namely, how career and the interest in academics are developed, how career and academic choices are made and how career success is obtained (Lent, Brown, & Hackett, 1994). The SCCT is divided in to two segments where the first segment represented personal socio cognitive variables such as self-efficacy, outcome expectation and personal goals (Lent et al., 1994) which enables individuals to have personal control on their career development (Lent, Brown, & Hackett, 2000) while the second segment was about numerous variables such as physical, environmental and learning practices which influences the interests in career and the selection of a career (Lent et al., 2000).

The identified findings of the study which prevents career progression was categorized into three sub categories named as structural, individual, work related factors. The personal variables in the SCCT are explained by individual factors which the research identified. The external environmental factors in the SCCT are explained by structural and work related factors which were derived from this study.

The personal variables which have a greater impact on career progression were identified in this study. The SCCT mentions about self-efficacy, outcome expectations and career goals of individuals which impacts the development of one's career. Self-efficacy explains about a person's belief regarding the ability to accomplish a given task. The medical officers strongly mentioned about their self-efficacy that they were assertive about their skill and knowledge as they work in a highly skill intensive sector. Further, they elaborated that they have been trained in a manner to deliver the best care to their patients and had experience in different fields which makes them efficient practitioners.

The research further identified individual circumstances medical officers' face in balancing their life and career which impacts their outcome expectations and career goals. In considering about gender all female medical officers encountered difficulties in concentrating on their postgraduate career with the duties they have to perform in their family life. The male medical officers also mentioned the need of being with their families but not to a greater extent as female medical officers. Sri Lanka being a country consisting of social norms and role stereotypes has negatively influenced the career decisions. The expected outcomes the participants' desires to achieve are taken aback due to the above mentioned reasons. Elaborating further on individual factors, the placements which medical officers receive if they engage in postgraduate studies were highlighted and it indirectly had an impact on the personal life and family which was elaborated to a greater extent by the medical officers. They were reluctant to travel to distant places as some already have had the experience and a majority pointed out the negative consequences they will have to experience of being separated from their families. According to the research findings the perception and goals these medical officers had was more focused towards a life style oriented career rather than being focused on academic development.

The spouse's profession if both partners were engaged in the field of medicine was too highlighted in considering the postgraduate career by medical officers that either party has to sacrifice due to family commitments. The outcome expectations of one party was sacrificed for the betterment of another. Past literature too elaborates that female medical officers married to medical professionals tend to support the partners' career rather than developing her own career (Tesch et al., 1992 as cited in Swanson & Power, 1999). Predominantly female medical officers emphasized on this fact reflecting to their family life. Another finding was that although medical officers were competent and talented enough to enter in to postgraduate career in the encounter of them engaging in other income generating sources due to the financial matters and to support the family needs they eventually feel reluctant to deviate from their private practice and engage in postgraduate studies.

The research identified that all the individual factors mentioned above directly and indirectly reciprocates to the family commitments. The domestic circumstances supersede the need of the engagement of the postgraduate studies which results in the depletion of future expertise knowledge in the field of medicine. This provides evidence on how the SCCT can be used to explain personal variables which are outcome expectation and career goals. The above mentioned individual reasons impacts the decisions made by medical officers in considering career choices regarding their postgraduate career.

The 2nd segment of the SCCT is about the external environmental factors which play an influence in one's career and selection of a career. The medical officers mentioned how the external environmental factors make a greater influence to the field of interest and to the career choices they make. They elaborated on many areas and the research finding categorized it as structural and work related factors.

The structures which the examinations are held were identified as a major barrier which demotivates medical officers entering into the postgraduate career. The strict regulations in the examination procedure too become a barrier to medical officers who has the passion to engage in the postgraduate career. These factors were not identified in the existing literature according to the researchers' knowledge although; the pathway leading to become a specialist in a field of medicine was identified by the past researchers. Another finding was the relationship between the number of times an individual attempt in an examination and the placements they receive. The higher the number of attempts in an examination the greater the distant of placements they receive and this factor alone demotivated many of the participants of this study. Many structural barriers were identified such as the number of examinations held per year, the tough screening examinations and the rigid regulations in the examination procedure which discouraged medical officers to enter into the postgraduate career. In accordance to the SCCT all these factors were external to the medical officers and had a strong impact on the choice of entering into the postgraduate career.

The working environment of medical officers and the impact it has on career progression was identified by this study. In their stipulated units the amount of stress medical officers undergo was mentioned by a majority of participants. Past studies too elaborate those medical professionals' deals with maximum level of stress (Cooper et al., 1988 as cited in Antoniou et al., 2003). The stress factor demotivated a majority to refrain from entering into the postgraduate pathway as they undergo a high level of stress during the working hours. Some medical officers explained that although the work is not stressful in particular units the work load is heavy and their dedication and extra commitment was needed which reduces their time to dedicate towards postgraduate studies.

Less number of studies has been conducted about how motivation can impact the career in medicine (Kusurkar, Cate, Asperen, & Croiset, 2011). This research was able to identify how the motivation and support from colleagues have an impact on the medical officers' future career prospect. A majority of medical officers stated that there is constant motivation and drive to engage in postgraduate career from the consultants and seniors but they did not have the motive to do postgraduate and become specialist in a field. Further, they elaborated that if they are placed in a different field irrespective of their preference to work the motivation to specialize ultimately fades away. Although, motivation is constantly there, different factors supersede the motivational strength in the engagement in the postgraduate career in medicine. The theoretical explanation on the influence of physical environmental factors are proven with evidence by the research findings relating to structural and work related factors of this study. The SCCT can be used to explain the significance of the factors which influence career development and how various elements in the external environment creates an influence on career and career choices.

The factors which prevent career progression of medical officers were identified in three categories as structural, individual and work related which influences their postgraduate career to a greater extent. This study was able to reciprocate to the theory with strong supportive findings on factors which influence the career progression of medical officers. All these factors could be explained by the social cognitive career theory and it proves with evidence that the SCCT is suitable to explain factors which prevents career progression.

7. Conclusion

In conclusion the researchers were able to achieve the objective of the study which was, to identify the factors which prevent career progression. The major findings were elaborated in the previous section and mainly structural factors along with individual and work related factors which prevent career progression of medical officers were identified. All data were gathered through semi-structured in-depth interviews conducted with 8 medical officers from the Western province and North Western province. The findings were further explained along with the social cognitive career theory which highlighted the factors that has an influence on individual's career progression in two segments and the theory was useful in explaining factors which prevents career progression.

The progression of the field of medicine and the experts in multiple specialties are important to the development in the field. The contribution given by the consultants are immense but if the numbers entering in to the postgraduate career gradually decline it would have adverse repercussions on the future expertise knowledge. Therefore, by identifying factors which prevents those entering to the postgraduate pathway, necessary implications could be taken by the relevant authoritative bodies to increase the numbers engaged in the postgraduate field. This would result in, advancing the fair distribution of expertise labor force across Sri Lanka which would ultimately improve the quality of Sri Lankan health sector and reciprocate to have great health indexes.

Further, studies could be done more extensively to identify structural barriers as a greater weightage was placed on it as the structure itself limits the numbers entering into the postgraduate pathway. If policies were implemented to reduce the barriers in the postgraduate curriculum it would result in the increase in the numbers enrolling to postgraduate studies which would lead to the growth of expertise knowledge and widely specialized labor force in the field of medicine in Sri Lanka.

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An empirical assessment on green HRM in Sri Lankan context

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Abstract

Global industrialization in the present era has affected the environment seriously causing broken eco systems. The situation in developing countries like Sri Lanka is the same. Green Human Resource Management (GHRM) is a developing issue in this scenario to protect environmental sustainability at organizational level. Though a theoretical base from previous studies on GHRM it was identified that practical assessments are very within the Sri Lankan context. The aim of this study was to provide an empirical assessment on awareness, current practice, constraints and perception of HR professionals around GHRM. Entire population of HR professionals in a private sector organization in Sri Lanka was used for the study. Forty-four GHRM initiatives under the main HRM functions as identified in previous literature were used to assess the above-mentioned criteria. The results indicated that there is a higher percentage of awareness on GHRM initiatives than their practice in the organization and that there is no impact from GHRM awareness on their practice regarding most of the GHRM functions in the organization. There is a positive preference to implement all the GHRM functions among HR professionals in the organization. Theoretical and practical knowledge deficiency has been identified by HR professionals as the main constraint impacting the implementation of GHRM. This study highlights a systematic literature on GHRM and its empirical implications on the field of HRM. It contributes for achieving further development in environmentally friendly sustainable businesses especially in developing countries.

Keywords: Environmental sustainability; GHRM; GHRM initiatives

1. Background

The development of global industrial sector and related environmental impact has led scholars analyzing about the contribution of managerial practices to environmental management goals in diverse fields such as accounting, supply chain management and marketing as a proactive environmental management concern (Muller-Carmem, Jackson, Jabbour, & Renwick, 2010). In this situation the companies with a future vision give high regard to the green concept and its contribution to organizational efficiency for the accomplishment of "greening" (Prathima & Misra, 2012). According to Bhalla

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and Mehta (2016), GHRM is an emerging management concept based on green involvement related to environmental protection which is applied to human resource management. GHRM has been mainly developed from an economic and social viewpoint to fulfill workforce human, psychology and environmental harmony. Implementing thoroughly of ISO 14000 standards and ecological auditing would assist to change the organizational tradition approach over pollution and waste management. GHRM consists of all HR functions integrated with carbon footprint reducing initiatives from the point of employee input including human resource acquisition, performance appraisal, learning and development, rewards and compensation etc. This has made positive impact on employee involvement, quality of work life, motivation and human capital retention in the organization. (Prasad, 2013). Though how much the concept of “greening” has come on to social platforms, the query of how an individual company or entire society attain sustainability from green movements remain unclear and arguable (Sudin, 2011) while there is an inherent potential within an HRM system in creating employees and organization to be green (Arulrajah, Opatha & Nawaratne, 2015).

GHRM concept in developing countries is mostly in its early years when compared to developed countries considering the implementation level. According to situation, more effort and more advanced academic research is needed for the field (Sylvia & Sujatha, 2016; Ramasamy, Inore & Sauna, 2017). The problem in the Sri Lankan context is that most of the areas in the country has become industrialized with the expansion of the business sector. Therefore, the natural resource utilization for production processes of those industries has increased tremendously. The wastage as a result of that production processes is released to the open areas and natural water flows has become a burden for the ecosystems and its patterns. High carbon dioxide emissions from the factories is a huge factor for causing acid rains, red rains, tsunamis, flooding, hurricanes, droughts etc. Health diseases owing to pollution and harm on animals and other natural creatures is a rising issue in Sri Lanka. The role which should be done by the Sri Lankan business sector is being limited for making environmental sustainability while there is a huge potential for doing this by organizational Human Resource departments. The aim of this study is to explore the current situation of GHRM in relation to the Sri Lankan context. Accordingly, the objectives of the study are three-fold; (a) to investigate the awareness of HR professionals on GHRM practices and their existence, (b) to explore the perception of HR professionals towards implementing GHRM and (c) to discover existing constraints for implementing GHRM practices according to HR professionals.

This is a study done in a reputed private sector organization in Sri Lanka. The contribution of this study lies in integrating the extant literature in GHRM area by discussing issues arises when implementing GHRM initiatives. It will lead Sri Lankan HR professionals to be more vigilant over the potential of implementing innovative approaches in HRM regarding environmental sustainability (Renwick, Redman & Maguire, 2008). The present study provides clear signals for directions over public policy development and for strengthening the GHRM agenda.

2. Literature review

2.1 Green concept

Opatha (2013) defined the term "green" as something relevant to natural environment, nature or means environment. According to Sharma (2016), green is the color of nature which represent living and the growth, symbol of fertility and freshness. The means for green including peace, growth, and life and has become a fashion at present. Organizations now consider the importance and need of going green incorporating it into their policies, practices and processes (Aggarwal & Sharma, 2015). According to Aggarwal and Sharma (2015), greening in organizational level is to shelter natural resources, detracting the pollution of atmosphere and nurturing the natural habitat. Isabella (2018) states that heavy workload and high target-oriented employees are a challenge to be aware on green environment. Lack of consciousness and responsibility of employees towards protecting environment is also a reason for this.

2.2 Sustainability

Sustainability can be defined as an opportunity for businesses to generate long lasting solutions by enhancing the socio-economic situation, in creating jobs and economic property into future. This term sustainability also refers to development which meets the present needs without compromising the ability of fulfilling future needs. A sustainable corporate can be defined as an undertaking which offers social, environmental and economic benefits called the "triple bottom line" (Deshwal, 2015). According to Trivedi (2015), sustainability is a development need while enhancing the stakeholder value of an organization. As stated by Sylvia and Sujatha, (2016), organizations have not been able to fully incorporate environmental stewardship into their daily practices due to issues with employees, technology and processes causing it to be less of a priority in organizations.

2.3 HR and sustainability

Guerci, Rahimian & Carollo, (2014) has explored the HR related paradoxes detected by organizations who are incorporating environmental sustainability into HRM. HR departments are called the "guardian of values" in many cases because it cares about the HR systems of all stakeholders. Environmental-friendly HR initiatives result in better employee involvement, greater efficiencies, low cost, job rotations, carpooling and sharing, teleconferencing, online training, recycling and ways of reducing carbon footprint etc. This developing concept of "sustainable HRM" is less considered by HRM scholars while it is broadly used by the scholars in the field of social accounting mainly regarding the sustainability reports of companies. According to Guerci et al. (2014), sustainability is a multidimensional philosophy that aligns social and economic goals with environmental concerns. This alignment is often contradictory. GHRM is an off shoot of Green management which aligns all HR activities to reduce organizational carbon footprint while earning carbon credits in terms of profitability (Prasad, 2013). Ehnert, Parsa, Roper, Wagner

& Muller-Camen, (2016) has done a study on these companies in terms of attributes of sustainable HRM.

2.4 What is GHRM?

GHRM refers to the use of the workforce in a way of achieving sustainable business improving environmental consciousness. Achieving this goal, it assists in utilizing organizational resources in a sustainable manner (Trivedi, 2015). GHRM has become a most attractive timely word in present business world. There is a trend of increasing awareness over GHRM not only on environmental aspects but also on economic and social well-being of all the stakeholders of the corporate (Renwick et al., 2016). GHRM consists of two basic elements called eco-friendly HR initiatives and preserving of intellectual capital (Isabella, 2018). It upgrades the sustainable application and employee responsiveness over sustainability issues improving workforce commitment (Rani & Mishra, 2014). GHRM acts as a staffing service provider for recruitment process outsourcing (RPO) for global merchandise. It assists in reducing recruitment cost and time by 80% (Prathima & Misra, 2012). According to Arulrajah et al. (2015) GHRM is basically implemented at organizational level to mitigate negative ecological impacts and to uplift positive ecological influences of corporates.

2.5 Why is GHRM important?

Deshwal (2015) reveals important outcomes of GHRM such as increasing employee morale, providing profitable ventures for quality human talent, improving brand image of the corporate, internal and external improvement of the quality of the overall company and making organization more vigilant with regards to emerging global issues and impacts. As revealed by Uddin and Islam (2015), GHRM achieves corporate financial goals through ecological sustainability. Aggarwal and Sharma (2015) states that cost savings are achieved through energy efficient systems in organizations. Competitive advantage can be enhanced by building an eco-friendly green image and improved loyal workforce with green strategies. GHRM practices in corporates attract more skilled environmental conscious workforce who can preserve and conserve organizational green processes. Organizations with GHRM produces more socially beneficial employment opportunities. As stated by Patel (2018), GHRM mitigate the utility cost of company operations while sustaining the input resource usage. Greening leads for government refunding and tax reliefs while increasing business opportunities.

2.6 Implementation of GHRM at organizational level

Seventy percent (70%) of the carbon dioxide withdrawals in Brazil is from natural environmental degradation. Avoiding of this degradation has become a challenge in Brazil besides introducing proactive management actions in companies. Natural landscape preservation has become a prominent fact (Jackson, Renwick, Jabbour & Muller-Camen, 2011). According to Markey, Mclvor, and Wright (2016), the way of implementing and the degree of impact of green initiatives is more important than the form of employee participation.

In the Australian context, a majority of corporates have involved in carbon mitigation movement having a role of employee participation. Markey et al. (2016) has revealed a strong association between carbon emission reducing activities and employee involvement in motivating, implementing and developing them. Trivedi (2015) has taken an effort to figure out the environment friendly HR initiatives and protecting of information capital which are the basics of GHRM. Renwick et al. (2008) has built-up the literature on “entry to exit” HR processes in which the green HRM has been embedded as a process model. GHRM can be incorporated to recruitment process by telephonic and video interviews for the purpose of reducing travel requirements and paper work. Green rewards may include carbon credit offsets, commuting in pollution free vehicles under compensation management. Environmental consciousness is a prior criterion of highly skilled and knowledgeable employees at present. Green implementation cannot be successful with green HR processes alone. However, businesses must fully involve themselves with the green agenda as a whole. This social responsibility aspect have to be included in the mission statement of company as a vital green objective (Prasad, 2013). Assimilation approach is very important in incorporating more strong green culture into a company with dysfunctional culture avoiding the culture clash (Margaretha & Saragih, 2012). In a Brazilian study, Jabbour, de Sousa Jabbour, Govindan, Teixeira & de Souza Freitas (2013) has verified the effect of environmental management (EM) on operational performance in automobile companies. As stated by Jabbour et al. (2013), there is a comparatively less statistically significant relationship between HR and environmental management through it is a positive relationship in the automobile industry. In a US study, Rangarajan and Rahm (2011) has revealed that education level, income, ecological awareness and availability of pre-existing successful environmental schemes have an influence on technical and strategic HR practices in cities. Accordingly, both public and private sector have commenced to make changes in HR. As stated by Yusoff, Othman, Fernando, Amran, Surienty & Ramayah, (2015), most of the corporates significantly consider GHRM reflecting five concepts. They are electronic HRM (E-HRM), Corporate Social Responsibility (CSR), work life balance (WLB), extra care program and green policies. As per Mazur (2016), the green work life balance concept has been broadly discussed to meet the challenges of facilitating positive interaction effects, preventing negative interaction effects and considering the employee opportunities for environmentally friendly conduct at work and in personal life. Green initiatives can be adopted to difficult HR functions like HR planning, recruitment process, performance and reward management. The success of implementing GHRM strategies depends on commitment of top management, positive behavior management and transparent reward systems (Jahan & Ullah, 2016), and loyalty and morale among employees towards the corporate (Das & Singh, 2006).

Most organizations worldwide use green initiatives in their organizational operations at present. General Electrics, Google, Infosys and Hewlett Packard are some of them. Some of these green initiatives include six sigma technique, green-recruiting, e-recruiting and green packing etc. (Goswami & Ranjan, 2015). Some developing nations like Afghanistan, China and India have not yet fully incorporated CSR with regards to green initiatives. However, this incorporation has been concentrated on employees in most of the HR functions (Swapna, 2018). Based on an Iranian study, Vahdati (2018) has figured out the internal factors such as personality and upbringing and the external factors such as digit divide, education and training which impacts on the implementation of GHRM. In a Palestinian study, done by Masri and Jaaron (2017) on environmental performance (EP) of manufacturing companies had found that there is a positive and significant relationship between main GHRM practices and EP. Total implementation is at a moderate level. According to Masri and Jaaron (2017), most and least influential practices respectively are green recruitment and green training and development. Most of the developed countries and a large number of organizations in developing countries have incorporated the concept of GHRM to maintain sustainable environmental performance. However, most of the organizations in developing countries still struggle with the challenges of economic development (Ramasamy et al., 2017). Mishra, Sarkar & Kiranmai, (2014) reveals that most of the Indian central public sector enterprises (CPSEs) use few existing GHRM initiatives and they are neither formally executed nor generally defined under GHRM techniques. According to Mishra et al. (2014), companies have understood the need for greening and the need of employee involvement. It reveals that the Indian CPSEs have figured the importance of encouraging environmental sustainability. Green programs enhance the social responsibility and profitability of organizations. India has become a leading Asian country which follows GHRM initiatives in their private and public sector companies. Such initiatives include mostly; consumption of energy from renewable sources, green luxury hotel chains, precious water from watershed development initiatives for moisture stressed areas, social and farm forestry initiatives, multipurpose green paper production from ozone treated elemens, chlorine free technology, methane emission mitigation activities and conducting of researches on marketable solutions for renewable and alternative energy sources etc. (Deshwal, 2015).

Validation a scale to measure GHRM has been proposed by Tang, Chen, Jiang, Paille & Jia (2018) fulfilling the urgent need of offering deep insights into implication rather than theoretical level based on exploratory analysis. This quantitative validation has been done by using five main GHRM dimensions such as green recruitment and selection, green training, green performance management, green pay and reward and green involvement. Tang et al. (2018) proves that the proposed measurement is valid. GHRM practices help organizations to figure out the best alternative options to mitigate cost with improved brand image and good will. It includes switching off unnecessary lights, less use of paper and using energy saving bulbs etc. (Patel, 2018).

2.7 Conceptual framework

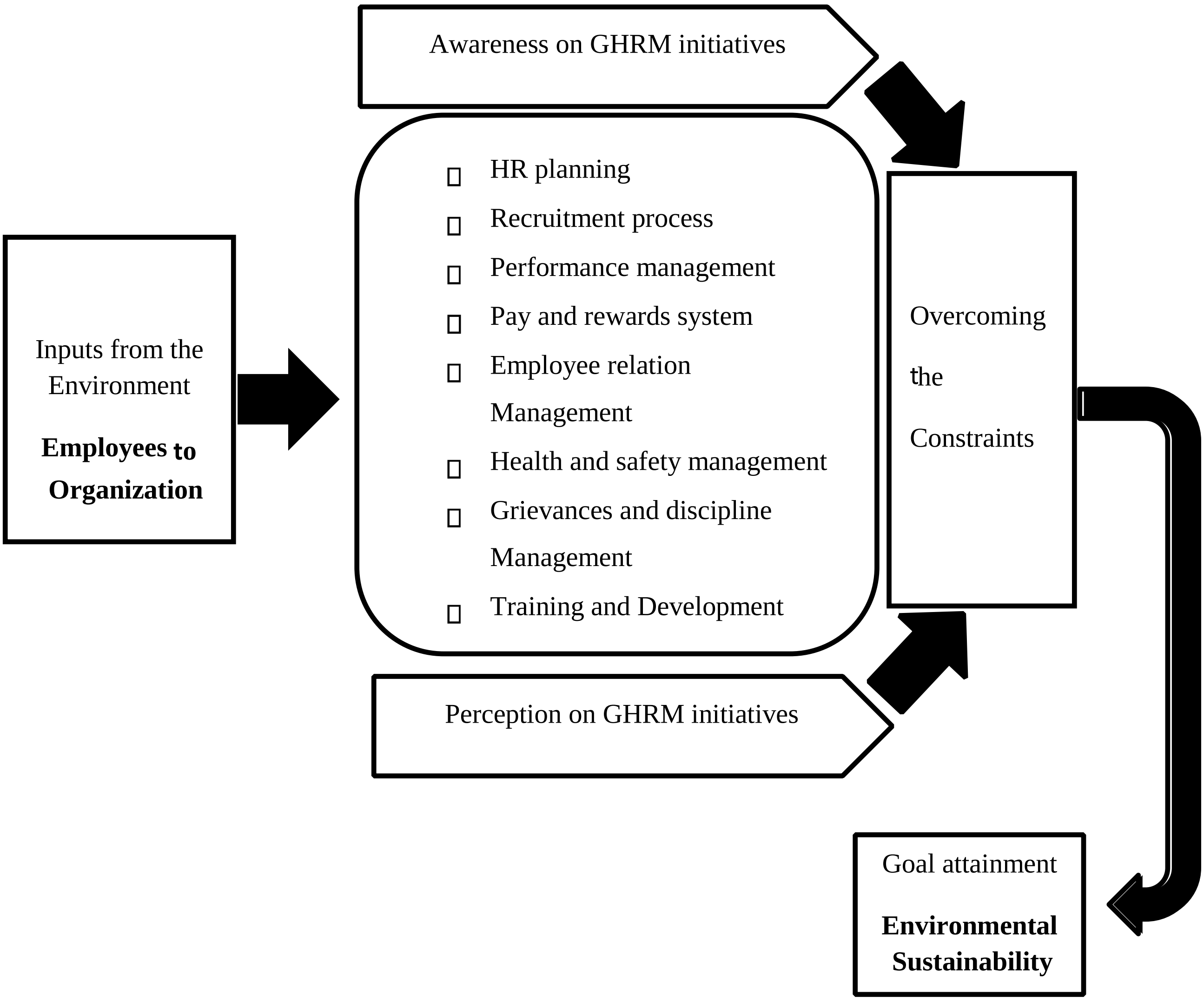


Figure 1: Conceptual framework

The conceptual or the theoretical framework of the study included the process of revealing the awareness and perception levels on GHRM mong organizational HR professionals. It illustrates the goal attainment of environmental sustainability at organizational level through overcoming the related constraints from the initial step of employee input to the organization. This kind of a diagram can show the interrelationship among each selected variables or factors. All the measurements of the study were based on 44 selected variables under previously mentioned main HRM functions. All the variables or GHRM initiatives were built based on literature on GHRM.

HR planning

- Forecasting number of employees and types of employees needed to implement environmental management initiatives (Eg: forecast experts needed to implement ISO 140001)

- Decide strategies to meet the forecasted demand for environmental work (Eg: appointing experts to perform environmental audits)

Recruitment, selection and induction

- Express environmental values of company while publishing job advertisements (Eg: be a part of green team of ABC...)
- Environmental concern and interest of the candidate is considered as a selection criterion (Eg: asking environmental related questions)
- Reflects the environmental policy of the company in its recruitment policy
- Provides general green induction (Eg: provide basic information on corporate environmental management policy of company)
- Provides job specific green induction (Eg: conducting an environmental orientation program specific to their jobs; recycling method)
- Make new employees familiar with greening efforts of the organization and encourage to be engaged within them
- Believing that gaining a reputation as a green employer is an effective way to attract new talents.
- Provide green job descriptions (JDs) for new employees (Eg: include environmental reporting roles; staff who are exposed to harmful emissions)

Training and development

- Provides environmental training to employees to develop required skills and knowledge (Eg: recycling /waste management /energy efficiency techniques/job rotation to train green managers of future)
- Conduct 'training need analysis' to identify green training needs of employees over environment management.
- Conduct seminars and workshops at organizational level to enhance environmental awareness of workforce
- Celebrate annual environmental day at organizational level with competitive programs (Eg: green champion-according to his contribution)
- Create "environmental event organizing green team". (Eg: dengue prevention programs)
- Forming a corporate environmental committee (with HR representatives, environmental professionals...)
- Health and safety training include an environmental element (Eg: how to prevent bad emissions in production process)
- Training teams of front-line employees to produce a waste analysis of work areas (Eg: In working sites)

Performance management system

- There is an "Environmental Management Information System" (EMIS) to monitor pollution, resource usage etc. (Eg; similar as HRIS)
- There is an "environmental audit" to gain useful data on managerial environmental performance

- Installing corporate wide environmental performance standards (Eg: on waste management)
- Performance evaluation system includes corporate environmental management objectives, targets (Eg: reduction of carbon emissions)
- Including a separate component for progress on greening in the performance feedback interview
- Performance evaluations are tied to the job descriptions mentioning the green goals and tasks

Pay and reward system

- A pay element over employees' eco-performance in employee packages (Eg: cash/bonus/incentives for contribution to waste reduction, green suggestions)
- Usage of non-monetary based environmental management rewards by company for employees (Eg: leave/gifts)
- Usage of recognition based environmental management rewards by the company (Eg: awards, dinners, publicity)
- Additional packages to reward green skills acquisition through trainings
- Company reinforcing positive green behaviors (Eg: Turning off PC's lights when leaving work place etc.)
- Company using negative reinforcements in environmental management (Eg: criticism, warnings, suspensions)
- Usage of positive rewards in environment management (Eg: Feedback)
- There is a linkage between participation in green initiatives and promotion/career gains in company
- Provides financial/tax incentives to use fewer polluting vehicles (Eg: hybrid cars)

Employee relations management

- Provides opportunities for employees to involve and participate in green suggestion schemes (Eg: paper crafts for decoration purposes instead of polythene, re-usable envelopes, use double side of papers)
- Joint consultations in solving environmental issues of the organization (managers & employees together)
- Recognizing union as a key stake holder in environmental management (Eg: waste reduction/recycling)
- Encouraging employees to use green forms of transport (car sharing) and tele /video conferencing

Grievances and discipline management

- Formulating and publishing "rules of green conduct relating to greening in line with environmental policy of organization (Eg: waste management rules)
- Developing a disciplinary system to punish employees who violate the rules of green conduct (Eg: warning, fining)

Health and safety management

- Creating environment related initiatives to reduce employee stress and occupational diseases caused by hazardous work environment (Eg: giving compulsory leaves to employees annually)
- Strategies to maintain an environment to improve employee health and safety (Eg: green zone/green factory)

Organizational culture and climate

- Organization culture encourages employees to make suggestions to engage in environment improving activities (Eg: top management support)
- Organization has main assumptions, values, symbols that support long term sustainability (Eg: waste allocation symbols, water disposal symbols)

Exit of employees

- Exit interview is held to acknowledge whether employee is resigning due to a green issue (Eg: moving to a greener employer due to hazardous work environment)

Barriers may act to limit the development of GHRM approach

A main limitation for development of GHRM is the untrue nature of the facts given by professionals in the case of academic data collection for the fear of responding negatively. Most of the companies in developing countries like India don't have any interest or adherence over green initiatives (Paillé, Chen, Boiral, & Jin, 2014). There is a considerable gap between the academic consensus of GHRM with its practical usage. This must be bridged by creating a research agenda (Renwick et al., 2016). As revealed by Arulrajah et al. (2015), the limited understanding on the scope and depth of GHRM is the key challenge faced by HR professionals. As elucidated by Deshwal (2015), challenges for GHRM includes difficulty of altering the behavior of workers in a short period of time, complicated situation for embedding GHRM culture and the challenging task of recruiting workforce with a green base. There are some problems arising in the case of proceeding green processes, tools and green structures to develop the green future of the organization. Ruchismita, Shitij, Pallavi and Vivek (2015) revealed that, cost of implementing green programs is the biggest barrier among the constrains such as, cost of maintaining programs, lack of support by company management and employees, workplace inefficiency and finally the lack of government support in implementing green practices. Some other barriers elucidated by Fayyazi, Shahbazmoradi, Afshar and Shahbazmoradi, (2015) include, staff resistance, lack of knowledge, deficiency of GHRM, ambiguity over green values, insufficient understanding of green policies, lack of green culture, insufficient organizational leadership support, implementation expenses, lack of technical support, managers resistance and complicating situation and difficulty of adopting green technology. In a Jordanian study, Rawashdeh (2018) has identified that hospital management don't make sufficient investments on GHRM. This is similar to the situation of other developing countries. There is a need of focusing on existing environmental needs and issues when crafting and proceeding HR strategies and HR policies in practice (Jahan & Ullah, 2016).

3. Methodology

This study is based on a new field of Human Resource Management called GHRM which is based on the integration of environmental sustainability aspects into existing human resource management functions. Human resource professionals have been selected instead of all the employees in organization since they have a human resource management base and understanding. Entire population of HR professionals (30) including managerial level and executive level of a reputed private sector organization in Sri Lanka has been used for the study. The population belongs to the different subsidiaries of the organization which follows different HRM techniques.

Systematic review of literature was used to build a strong understanding on GHRM initiatives. This understanding was used to prepare the semi-structured questionnaire to collect the responses from the population of HR professionals. Cronbach's reliability coefficient was calculated giving the alpha value of 0.976 which indicate acceptable measurement of reliability for the pre tested questionnaire. Informal interviews were also held with respondents to get more precise understanding on new GHRM initiatives undertaken by the company and the practical issues related with this newly emerging field of Human Resource Management. Forty-four (44) selected GHRM initiatives (Variables) were subjected to take measurements on awareness, current practice and perception of the HR professionals. These were mentioned in the literature review section.

Descriptive data such as awareness, current practice and related constraints of GHRM initiatives were analyzed by using excel package for the graphical representations like column charts. Some non-parametric analyzing was done using IBM SPSS software. We have developed two hypotheses in our study.

> Hypothesis 1: There is a relationship between awareness over GHRM and practice of them.
> (Ho: There is no relationship between awareness on GHRM and its practice; H1: There is a relationship between awareness on GHRM and its practice)
> Chi-square test was done to test this hypothesis to quantify whether awareness affects the practice.
>
> Hypothesis 2: There is a positive perception towards implementing GHRM functions.
> (Ho: There is no positive perception towards implementing GHRM functions: H1: There is a positive perception towards implementing GHRM functions)
> Wilcoxon sign rank test was done to analyze these five-point Likert scale data ranging from strongly averse (-2) to strongly prefer (+2) over GHRM initiatives. All the hypotheses were tested at significant level of 0.05.

4. Results and discussion

4.1 Awareness on GHRM practices and their existence in organization

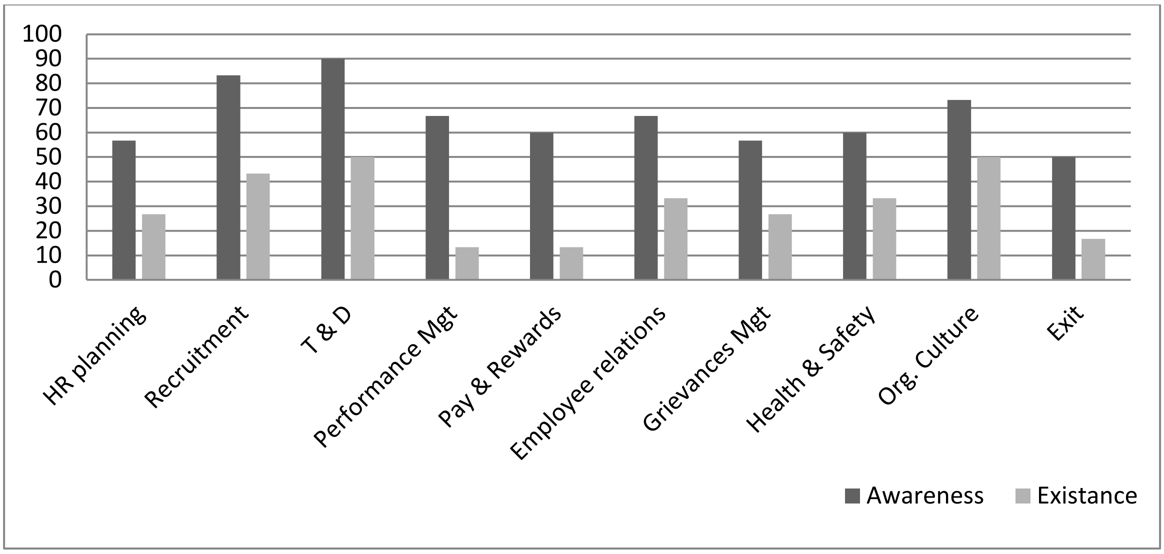


Figure 2: Awareness on GHRM practices and their existence in organization
Source. Survey data (2018)

This column chart shows that there is a higher percentage of awareness on all the GHRM initiatives among the HR professionals compared to their practice in organization.
According to the results we built up a hypothesis to test whether there is an impact of awareness on practicing these initiatives in the organization.

> Hypothesis 1: There is a relationship between awareness over GHRM and practice of them.
> (Ho: There is no relationship between awareness on GHRM and its practice; H1: There is a relationship between awareness on GHRM and its practice)
> Chi-square test was done to test this hypothesis to quantify whether awareness affects the practice.

Table 1: Associations between awareness and the practice of GHRM functions

GHRM function	Test value	P value**	Decision
HR planning	0.1531	0.6974	No association between awareness and practice of HR planning
Recruitment process	0.7697	0.2487	No association between awareness and practice of recruitment process
Training and Development	1.7093	0.1898	No association between awareness and practice of training and development
Performance management	0.2210	0.6386	No association between awareness and practice of performance management
Employee relations management	3.6651	0.0552	No association between awareness and practice of employee relations management
Pay and rewards management	0.4327	0.5107	No association between awareness and practice of pay and rewards management
Exit interview function	2.160	0.1416	No association between awareness and practice of exit interview

P= Probability value (Chi- square test) **Significant at 5%
Source: Author's own data (2018)

According to the results, the probability value is higher than the significant level of 5% for these HRM functions including HR planning (p=0.6974), recruitment process (p=0.2487), training and Development (p=0.1898), performance management (p=0.6386), employee relations management (p=0.0552), pay and rewards management (p=0.5107) and exit interview function (p=0.1416). It reveals that there is no association between those HR functions' practice in the organization and the HR professionals' awareness on them. It can be stated that an impact from extent of awareness has not been made on their practice. They are mutually independent.

Table 2: Associations between awareness and the practice of GHRM functions

GHRM function	Test value	P value**	Decision
Grievances management	4.2341	0.0399	Association between awareness and practice of grievances management
Health and safety management	5.625	0.0177	Association between awareness and practice of health and safety management
Organizational culture	14.3181	0.0132	Association between awareness and practice of organizational culture

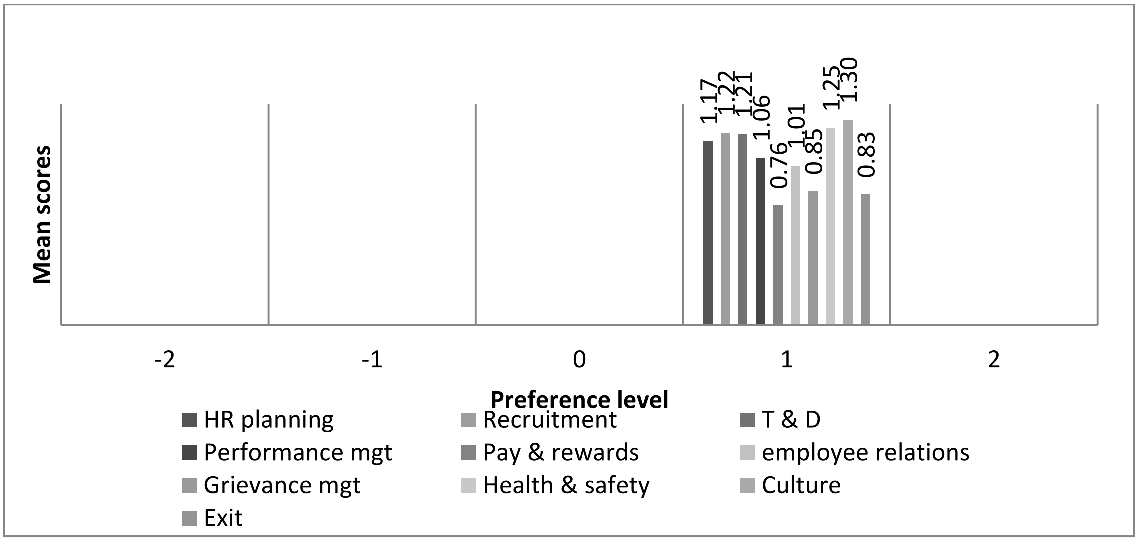
P= Probability value (Chi- square test) **Significant at 5%
Source: Author's own data (2018)

According to the chi- square test, probability values for these three HRM functions are lower than the significant level of 5%. They are grievances management (p=0.0399), health and safety management (p=0.0177) and organizational culture (p=0.0132). It reveals that there is an association between those HR functions' practice in the organization and the HR professionals' awareness on them. Accordingly, it can be stated that there is an impact of the extent of awareness on their practice in the organization.

4.2 Overall perception towards GHRM functions

We built up a hypothesis to test whether there is a positive preference among the HR professionals towards implementing GHRM initiatives. Since it is very much important of their attitude as a future direction in this newly emerged field.

Hypothesis 2: There is a positive perception towards implementing GHRM functions.
(Ho: There is no positive perception towards implementing GHRM functions: H1: There is a positive perception towards implementing GHRM Functions)
Wilcoxon sign rank test was done to analyze these five-point Likert scale data ranging from strongly averse (-2) to strongly prefer (+2) over GHM initiatives.
According to the Wilcoxon sign rank test, probability values for all these HRM functions are lower than the significant level of 0.05. It reveals that there is positive preference from all the HR professionals in the organization to implement all the GHRM initiatives under these HRM functions. They include HR planning (p=0.0000), recruitment process (p=0.0000), training and development (p=0.0000), performance management (p=0.0000), employee relations management (p=0.0000), pay and rewards management (p=0.0023), exit interview function (p=0.0.0000), grievances management (p=0.0005), health and safety management (p=0.0000) and organizational culture (p=0.0000).



Figur 3: Overall perception towards GHRM functions
Source. Author's own data (2018)

(-2) = Highly averse (-1) = Averse (0) = No idea (+1) = somewhat prefer (+2) = highly prefer

According to the results overall mean values of preference for implementing GHRM functions is located around the positive preference area. It reveals that there is a positive perception among HR professionals over implementing GHRM functions in the organization.

4.3 Existing constraints in implementing GHRM practices in the organization

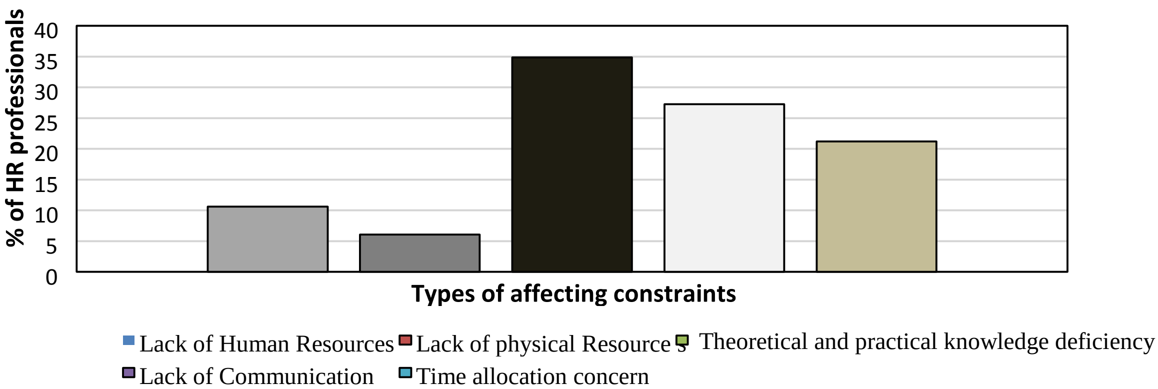


Figure 4: Existing constraints in implementing GHRM practices in the organization
Source. Author's own data (2018)

According to the results; theoretical and practical knowledge deficiency has been identified by the HR professionals as the highest impacting constraint (35%) for GHRM implementation in the organization. Next most challenging constraints are lack of communication (27%) and lack of human resources (11%). The least impacting constraint is the lack of physical resources (6%) as identified by the HR professionals in the organization.

4.4 Other green steps taken by the respective organization

Most of the plantation estates owned by the organization has been certified for the Rain Forest Alliance certification (RA). Hence all employees are aware of environmental practices. Further annual audits are in place to evaluate every practice. They use compost and organic fertilizer as a major input for their cultivations while using reusable bags to replace polythene. Most of the estate factory and company owned hotel roofs have been replaced with solar power panels and have been installed with Variable Speed Drives (VSD) for effective energy consumption. Company have used LED lights in their production floors which are more energy efficient. Every estate use rainwater harvesting ponds and pits and have planted green bamboo along the water bodies. Organizational estates have constructed live fences (jeewa kotu) for their lands. Waste segregation practices are also practiced as a major concern. Meanwhile, they have planted vegetative berries to avoid chemical drifting from their production processes. Corporate produces recycled papers from elephant dung as an eco-friendly paper production while bio gas produced with waste food products in hotels owned by the corporate using bio mass gasifiers. Proper waste water management have been established by the organization and recycling processes are proceeded with BOI recycling plant. Elevator agencies owned by the company uses energy regeneration elevators. Company use wasted papers for event decorations and use double side papers for most of the documentary processes. Re-usable envelopes and re-usable one side papers are mostly used for the internal documentary works. All the company application forms will be scanned and saved to reduce unnecessary paper usage.

Further, the respective organization hold tree planting programs, Environmental quizzes and beach cleaning activities as voluntary involvements being social entrepreneurs.

5. Limitations of the study

This study has been conducted in one private sector organization; yet, this judgment about empirical analysis may vary across country and cultural organizations. Therefore, longitudinal studies may be carried out in future. Theoretically, this is a preliminary study which does not include in-depth assessment over every GHRM initiative due to scarcity in practice. Moreover, other sampling techniques or instruments may be used to measure the same concept nationwide. However future studies recruiting larger sample sizes are needed. Also, it is more valuable to conduct a research in diverse organizational contexts.

7. Recommendations

The practical knowledge and the importance of GHRM initiatives must be communicated through training programs and workshops as an important concern since it enhances the practice in the organization. Top management should continuously supervise the implementation of GHRN through feedback and individual interviews whether the HR professionals are implementing green initiatives. Communication between top management and the employees must be strengthened on implementation of these upcoming sustainable initiatives with mutual idea transfer. Considerable time has to be allocated for implementing new initiatives within the organization including sustainable practices and green behaviors. This assessment on empirical situation of GHRM has to be reconfirmed in a large-scale project study integrating large scale, small scale private and public organizations in Sri Lanka. Such studies would disclose finer details on GHRM and their issues in implementing GHRM in organizations in Sri Lanka.

7. Conclusions

After analyzing diverse literature advocating GHRM it can be concluded that GHRM is in its nascent stage in Sri Lankan business organizations with relation to awareness and practice of GHRM initiatives. Sri Lanka is an upcoming industrial country which acquires a higher portion of annual GDP of the country compared to its agricultural sector. Increasing trend of industrialization has caused natural resource exploitation and harmful disposals to the environment as a result of organizational production processes. This burden finally results in loosing of environmental sustainability and breaks down the eco systems. Important procedures have been undertaken by many countries within the last decade considering this global issue. However, the business sector contribution on this concern is limited in Sri Lanka. For a developing country like Sri Lanka, the environmental sustainability crisis poses both a challenge and an opportunity. In this scenario research can make an immense contribution as academics in the field of management drive stakeholders towards environmental sustainability.

Though a satisfactory extent of literature is available in the Sri Lankan research field, empirical assessments are extremely rare to find. This could also be a reason for the lack of usage of GHRM in Sri Lanka. Accordingly, this study was done to assess the practical situation of GHRM in a private sector organization in Sri Lanka. The research highlights a large scope of GHRM initiatives the companies can initiate with respect to greening of organizations. Main HRM functions including human resource planning, recruitment selection and induction process, training and development, performance management system, pay and rewards system, employee relations management, grievances and discipline management, health and safety management, organizational culture and exit interviews. These practices were used to analyze the awareness, practice, perception and related constraints over them. The study reveals that the extent of awareness is higher than the practice of GHRM initiatives under every HR function in the organization. Also, it reveals that there is no impact from the extent of awareness on their practice. According to the study there is a positive preference in implementing GHRM initiatives relating to every HR function. Theoretical and practical knowledge deficiency has been identified by the HR professionals as the highest impacting constraint for GHRM implementation in the organization. Organizations with GHRM produces more socially beneficial outcomes with less operational costs while achieving environmental sustainability. This study supports the literature of GHRM and environment protection that is scarce in developing countries like Sri Lanka. Also, it provides a clear understanding on how GHRM practices associate with each other. Soon, GHRM as an initiative has the potential to be worked upon as one of the best practices for sustainable growth of businesses.

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Impact of big five personality traits on virtual team members' self-effectiveness: Mediation effect of group atmosphere

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Abstract

There has been a rapid growth in virtual work patterns in organizations over the past years. The outcome of distributed teams with new kinds of work trends, decision-making styles and relationships, led to unique challenges for theory, discipline and research on the effectiveness of individual team members. Despite researchers continually investigate the effectiveness of virtual teams, different evidence found is vague and therefore, hard to gain a clear knowledge of the effect on the virtual team. In this study, we examine the mediating effect of group atmosphere between personality traits and perceived self-effectiveness in virtual IT teams. The overall personality trait was found significantly and positively related to self-effectiveness and group atmosphere. The findings from research also bring to our attention that the group atmosphere is positively associated with self-effectiveness of a team member. The results identified that the most important personality traits for self-effectiveness are extroversion, conscientiousness, openness to experience and neuroticism. The most important group atmosphere factors for self-effectiveness are identified as trust, respect, openness to communication and cohesion.

Keywords: Group atmosphere; Personality traits; Self-effectiveness; Virtual teams

1. Introduction

Over the past several decades, organizations have transitioned and inspired the team-based tasks, with breakthroughs in Information Communication Technology (ICT) and thus facilitating this move. The latest entrants to Information Technology - Remote Teams - led to modern virtual team invention with developments in working patterns, decision-making and communication between members. Remote teams can be stated as virtual teams or distributed teams, a group of people working together from various places, executing heterogeneous assignments, exchanging responsibility for results and relying on technological help for a significant part of their communications (Cohen & Gibson, 2003). The team structure has beyond the specification a set of employees at the same location to incorporate members from various geographic regions and organizations (Berry, 2011). These improvements together face unique challenges to exercise the research on the team's effectiveness (Berry, 2011).

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In recent years, there has been a rapid growth in remote teams in organizations and there were many opportunities for further research (Pinsonneault & Caya, 2005). In comparison to traditional teams, virtual teams have different challenges and opportunities. Arguably, the same logic for the traditional team may be applied to virtual teams. However, the optimal team composition in virtual settings may be different from the traditional teams. The virtual nature of these teams has an adverse effect on the effectiveness of members as well as the team-based work output. On the basis of their distinctive knowledge and expertise, virtual team members selected are allotted respective tasks. The selection of these candidates, does not, however, assure total effectiveness or maximum output. Remote work setups might not be appropriate for all but for some, a perfectly suited virtual work (Cascio, 2000). Contradictory statements and inconsistent results regarding the factors affecting the virtual team effectiveness are highlighted in the literature.

Researchers around the globe are examining the effectiveness of virtual teams and the efforts put in by each member of the team in such cases (Großer & Baumöl, 2017; Ford, Piccolo, & Ford, 2017; Edwards & Sridhar, 2002;Wickramasinghe & Nandula, 2015). Regrettably, with various evidence, it is ambiguous and difficult to get a clear understanding of the impact on the virtual team. For example, Schweitzer and Duxbury (2010) argue with substantial evidence that working in virtual setups negatively affects the effectiveness, whereas, Kock and Lynn (2012), stated that working in virtual team can have a positive impact on self-effectiveness to perform a task.

The research findings by Perera and Fonseka (2011) revealed that the personal characteristics of the team members had a significant impact on team output. Although individual differences and similarities are being used to diversifying teams, it is still unclear how the variance of traits influences effectiveness in virtual settings. In such settings, members require a different array of skills (e.g. computer self-efficacy, advanced communication techniques) and traits to be successful. Luse, McElroy, Townsend, and DeMarie, (2013) found that personality traits affect individual willingness to trust and collaborate with virtual teams environment. The virtual environment may negate personality characteristics that are relevant in face-to-face situations. Townsend, DeMarie, and Hendrickson (1998) explained that introverts are more likely to participate in online discussions than in face-to-face ones. Researchers have shown that personality tests are useful in making decisions and help managers forecast who is who for the right job. In virtual settings, preferable traits may vary than the on-site teams. Thus, it is important to understand how the diverse personality of members in virtual teams effectively contribute the output. In this research; the big five model of personality traits: - Openness, Extroversion, Agreeableness, Conscientiousness and Neuroticism are considered to identify the different personalities of individual members.

Mannix and Jehn (2014) state that social processes reflect interactions between members, while team atmosphere or group climate reflects members' attitudes about the group's environmental characteristics, such as the level of respect that has evolved and the members' commitment to each other. Self-effectiveness is an important predictor of cognitive choices in terms of setting goals, the amount of effort spent on a specific task, and actual performance (Choi, Price, &Vinokur, 2003). An individual's perception of the group environment has a significant impact on their attitude and interactions between groups. A group climate that is characterized by open communication and a mutually understanding relationship among members may point to the positive changes in members' self-efficacy because it allows new experimentations, the practice of new skills without fear of appraisal, a frequent and open exchange of feedbacks (Anderson & West, 1998; Edmondson, 1999).

According to Reina, Reina, and Hudnut (2017) trust levels between members have a direct impact on the team's positive effectiveness and vice-versa. This is also supported by the study of Edmondson (1999), which states, trust is the basis for further advancement of interpersonal beliefs that represent psychological security in a team. It explains that a group environment characterized by interpersonal trust and mutual respect, allows people to find themselves comfortable. Although the big five model of personality traits, discusses personal characteristics, it does not consider the mutual trust and respect since these can be influenced by the external environment.

Jobs in virtual teams should be considered as an engagement in team climate (Zhao, Seibert, & Lumpkin, 2010), and such involvement can be more efficient if it matches with team members' character, showing the importance of person-team fit. The environment in a workplace affects in many ways, such as individual actions, relationships, the context in which work is conducted, the work itself, and even changes in personal attributes such as skills to fit a better person-environment (Grant & Parker, 2009). Anyhow, it is not possible to stipulate which person-team fit theory is the best fit for virtual teams. Accordingly, in order to conceptualize, supplementary fit and complementary fit approaches are considered. Therefore, this study intends to identify which traditional team fit theory extends to virtual settings atmosphere. Due to the high possibility of diverse workforce participation in a distributed team, the complementary theory is considered in this study.

The theory of supplementary fit suggests that individuals are more comfortable and productive when they have similar characteristics as other team members (Muchinsky & Monahan, 1987). According to this theory, teams with similar characteristics members with similar goals and values will have less conflict, increased trust and yields better performance and higher satisfaction (homogeneity). On the other hand, the complementary fit theory suggests that people fit when they fill an emergency situation (Muchinsky & Monahan, 1987). This theory states; diverse team members with a variety of skills and characteristics will perform better (heterogeneity) when the organization provides the rewards that an individual member deserves; where individuals and organizations complement one another by addressing each other's requirements (Cable & Edwards, 2004). A member performs well with high job satisfaction and effectiveness whether his/her characteristics meet the work demands (Guan, Deng, Risavy, Bond, & Li, 2011). Complementary fit theory can be considered a general theory that is used in the traditional team settings, but it is deemed inadequate, due to the lack of consideration of the virtual setting. Therefore, this study aims to expand the complementary person fit theory with additional characteristics as a team atmosphere. This is proposed by analyzing big five-personality theory characteristics such as trust, respect, cohesion, liking and openness to feedback, which is grouped as a team atmosphere.

To date, research has shown that there exists a relationship between personality composition and group performance and the environment. Nevertheless, previous research has not yet identified the relationship between personality traits, self-effectiveness and group environment in the virtual environment. Understanding how personality influences or relates to the self-effectiveness of the virtual software team member is therefore, a key area for investigation. Thus, this study set forth to examine the following research questions:

What are the personality traits that determine the self-effectiveness of a virtual team member?
What factors of team atmosphere affect the virtual team member's self-effectiveness?
Does the group atmosphere mediate the impact of personality traits on self-effectiveness?

In the next section, we will discuss the theoretical background of our study and present our research hypotheses. Subsequently, we will have a look at the research methodology and the findings. To conclude, a discussion is done on the paper with the findings, limitations and suggestions.

2. Literature review

2.1 Virtual Teams

A virtual team is defined as a group of people with unique skills who work interdependently but are separated geographically which necessitates their interaction using information technology such as Remote working teams (Gibson & Cohen, 2003; Luse, McElroy, Townsend, &DeMarie, 2013). Remote work is as similar as face-to-face work (Morello, 2005), the use of virtual teams in the workplace has risen rigorously in the recent times, and this trend is expected to continue and improvise a step ahead in the coming years (Dulebohn & Hoch, 2017).

Despite the advantages of virtual teams, they are not widely successful (Connelly &Turel, 2016). Since communication media may differ in their ability to convey social presence; information-rich, nonverbal cues, facial expressions, voice reflections, the gesture etc; may be lost due to distortion in communication media or otherwise termed as Computer-Mediated Communication System (CMCS), which lacks the social presence inherent to the face-to-face environment. This is supported by the findings of Kayworth and Leidner (2002), which argues that the challenges in virtual teams are communication, culture, logistics and technology. In a distributed team, when the potential to build connections between team members can be hampered, it can have a negative effect on individual results such as creative thinking, moral standing, quality, decision making and process loss.

Due to the increased adoption and endurance of virtual teams, it is crucial to understand what drives their effectiveness and performance. While many socio-emotional (relationship building, trust, cohesion) and task processes (communication and coordination) can influence virtual team outputs (Powell, Piccoli, & Ives, 2004), the inputs to these systems are equally crucial and can directly affect both group and individual performance outcomes (Webster & Staples, 2006). Though recent research has begun to focus on the presence of elements of remote work, they have mainly focused on the impacts of specific types of virtual work structures on the morale and productivity of employees instead of the individual characteristics required for employees to be effective (Shin, 2004). However, the individual and team factors leading to the effectiveness of virtual teams remain uncertain. (Mysirlaki &Paraskeva, 2019).

In addition, the findings of these studies were often contradictory – some revealed positive work performance and productivity in remote work (DiMartino & Wirth, 1990; Kock & Lynn, 2012), while others showed that remote work causes less satisfaction with peers and with promotion (Igbaria &Guimaraes, 1999), a sense of solitude from the corporate culture (Rodgers &Teicholz, 2001) and negatively affects effectiveness (Schweitzer & Duxbury, 2010). These contradictions infer that virtual work settings may not be suitable for everyone but only for some to work in a virtual environment (Cascio, 2000). Hence, deciding the characteristics of virtual employees that would take into account the solid match to virtual associations is significant.

It is a completely different challenge to manage teams whose members are physically co-located than it is to manage a team comprised of members spread out all over the world. Research is required to examine ways in which organizations can develop an effective virtual team (Maynard, 2005). For example, organizations have to understand the needs of each group members and their characteristics and personalities, from their leaders in the organization to enhance the functioning of their virtual teams in such dispersed settings, and what traits of members are the best suitable for the virtual setup to enhance the productivity of each member’s in the group.

2.2 Self effectiveness

A well-accepted predictor of people's actions and performance is their self-effectiveness, determined as beliefs in their ability to manage and perform courses of action (Bandura, 1997), which has also been recognized as a vital indicator of many facets of behavorial choices and actual task performance (Gist & Mitchell, 1992). Self-efficacy or self-effectiveness refers to an individual´s perceived capability to perform in a way and to have control over unexpected events affecting his/her life. View of self-effectiveness is a key factor of cognitive choices in goal setting, the amount of effort involved in a particular task and the performance (Choi et al., 2003). Individuals with higher self-efficacy have confidence in their ability to overcome obstacles and to perform well (Bandura & Locke, 2003). Self-efficacy viewpoints can lead to the development of inherent personality traits into attitude. Self-effectiveness may thus be seen as a contributor to the development and regulation of behaviors that may be characterized as a personality trait.

For the sustainability and progression of people in general and in organizations, personal effectiveness is vital. It motivates people to evolve self-knowledge and utilize it to their maximum performance, in terms of their achievement at the job and managing others with leadership skill. At the micro-level, the individual advantages of being personally effective include, producing a positive individual impression, adding value to work relations and handling personal growth. The organizational preferences at the macro-level involve improving relations and capabilities that strengthen rapport and connections with other team members, building high-performance team members and developing a culture of reflection and self-development (Pathak &Srivastava, 2010).

The findings by Fosse, Buch, Säfvenbom, and Martinussen (2015) suggest that self-effectiveness can partly explain the relationship between consciousness and performance. The results, therefore, support the assumption that individuals who believe in their own ability transform such basic arrangements into personal behavior.

As many academics have realized, changes in individual abilities and behaviors occur via social processes. Groups reflect an immediate social context that influences the way individual members think and feel (Hackman, 1992). Researchers have shown that group environment can alter the motivation, attitudes and behavior of individual people (Latané, Williams, & Harkins, 1979; Brauer, Judd, &Gliner, 1995) and empirical studies indicate that the work environment influence on self-effectiveness. This study investigates how self-effectiveness shaped by individual characteristics and group atmosphere.

2.3 Group atmosphere

Each team has its own environment, which reflects the concept of sharing of ideas and attitudes between team members to encourage workflow and for achieving group viability (Soomro, Salleh, Mendes, Grundy, Burch, & Nordin, 2016). According to Mannix and Jehn (2014), social processes reflect interactions between members, while team atmosphere reflects members' attitudes about the group's environmental characteristics, such as the level of respect that has evolved and the members' commitment to each other. Jehn and Mannix (2001) introduced the construct of the team atmosphere and identify trust, respect, cohesion, openness to feedback and liking as the five underlying dimensions of the work environment. The study findings by Jehn, Rispens, and Thatcher (2010) argue commitment is one of the most significant variables along with respect and trust, which are the three major dimensions of a team atmosphere. A study conducted by He, Paul, and Dennis (2018) consider commitment and trust as two vital elements in a virtual team. In this study team atmosphere is considered multidimensional concept which encapsulates trust, respect, cohesion and openness to feedback (Jehn & and Mannix, 2001).

Ford, Piccolo and Ford (2017) state that the leader and individual team members in an organization must find ways to be transparent with each other to build trust and should sustain it. As technology is the hardware of developing virtual trust, the actions of the parties in virtual teams are the software, which builds and sustains the required trust. Aubert and Kelsey (2003) say many factors improve the effectiveness of teams, but the one that is highly influencing is trust.

In the team climate, it is not only represented by individual cognitive, but it also influences the social and environment process of the team. On the other hand, it is also related to the manner of designed, developed and working together in the aspects such as communication patterns, participation, safety, norms, cohesive, task style, vision and innovations. One of the strong actors of a motivator in the team is cohesiveness, which is a collective perception of vision of the team. A cohesive team will show a spirit of unity and mutual support that helps team members resolve conflicts quickly without residual hard feelings (Bradley & Hebert, 1997).

The research carried out by Cooman, Vantilborgh, Bal, and Lub (2015) found that the team atmosphere consisting of high supplementary and complementary fit in shared perception performs well than another team. The author explains team related attitudes are high when supplementary and complementary team fits are stronger.

In an organization, team effectiveness is not only assorted by their skills and knowledge, but also by the values, attitude and personality of an individual. Mannix and Neale (2005) explained that the attitude and behavior of each member's impact a team completely, therefore it is necessary to ensure perceive person-team fit. The shared perception of person-team fit can enhance cohesion and effectiveness.

Zoogah, Boghossian, and Sawyer (2010) pinpoint that the leadership team personality and team cohesion are strongly affected by team effectiveness. The goal of this study is to examine collective personality in relation to team effectiveness by focusing on two personality perspectives–structures of knowledge and regularities of behavior. Diversity is one of the characteristics of virtual teams in an IT-based organization. When the diversity is huge, traits of surface and deep level attributes of individuals vary among them. It is explained that surface characteristics are demographic in nature whereas deep-level characteristics are a psychological attribute in nature, which focuses on personality.

2.4 Personality

During past few decades, past and contemporary researches were conducted and re-examinations of classical works dedicated by people trained in disciplines such as psychology, sociology, business administration, management, economics and political science to answer these questions regarding personality trait of employees and individuals.

The combination of characteristics and qualities of an individual, which is distinctive from others, is a personality (Cattell, 1973). In ensuring a healthy and progressive relationship between employer and employee, ambiguity, adjustment and anxiety, seems to be more important than ever. This relationship can be examined using the concept of psychological contract. Goyal (2009) reported that to achieve high productivity, a positive the psychological contract becomes paramount.

Organizations should ensure that maximum use of the talent and energy of individuals at the same time make them feel that their work is important and that they belong to organizations. When people in an environment such as a virtual team have different values, they tend to have different behavioral patterns in their task and goals. Personality is dynamic in nature, which is an individual's psychological system growth and development.

Allport (1967), who is the pioneer of the personality trait approach, explained personality traits as structured mental schema that demonstrates and drives behavior. Big five personality traits are the predominant model in modern psychological theories that many scientists and academics accept. Big five personality traits are considered as a theoretical instrument to assess the personality of most of the contemporary research because of the robustness and validity. This model structured around similarities between previous models and provided a model that created a common language for all personality researchers (Digman, 1990). Judge and Ilies, (2002) agreed that big five personality traits are generalized across the various culture of individuals. As a result, it is visible that big five personality traits are the most accepted trait structure in social psychology in the contemporary world. In the research of Kumar and Bakshi (2010), they have contended that big five personality traits are independent traits that provide meaningful information about individual differences and their response in different situations. It is believed that people react to the situation according to a predetermined manner such as their characteristics, needs, attitudes, motives and preferences. Work attitude and behavior are determined by the support it or at least linked to individual attitudes.

Therefore, for the purpose of undertaken study, big five personality traits such as openness, extroversion, agreeable, conscientiousness and neuroticism are used which is reliable and replicable.

3. Conceptual framework and development of hypothesis

Study about the relationship between personality traits and self-effectiveness is carried out by some researchers in different industrial sectors. However, there is an absence of evidence in the literature, which measures the relationship between personality traits, group atmosphere and self-effectiveness among virtual IT employees. To fill this gap, the current study will determine the possible personality traits and group atmosphere factors that influence the self-effectiveness of a virtual team member and try to identify the mediation effect of group atmosphere between personality and self-effectiveness. The relationship between personality traits on personal effectiveness is explained based on the conceptual model. Considering the independent variable as big five personality traits that contain extroversion, agreeableness, conscientiousness openness, and neuroticism, dependent variables as effectiveness and mediation variable as a team atmosphere by assuming all other factors were constant.

The conceptual framework proposes that there is a direct link between personality trait (PT) and self-effectiveness (EF). Further, a mediation effect has been proposed between PT and EF by team atmosphere (GA). Figure 1 presents the conceptual framework, which shows that there is one exogenous variable; overall personality traits (PT), one endogenous variable; self effectiveness (EF) and one mediating variable; group atmosphere (GA).

The hypotheses were designed by considering the aforementioned variables by reviewing different literature where the main intention was to find the relationship between personality traits and self-effectiveness and the influence of group atmosphere on the mentioned relationship of software employees in a selected organization.

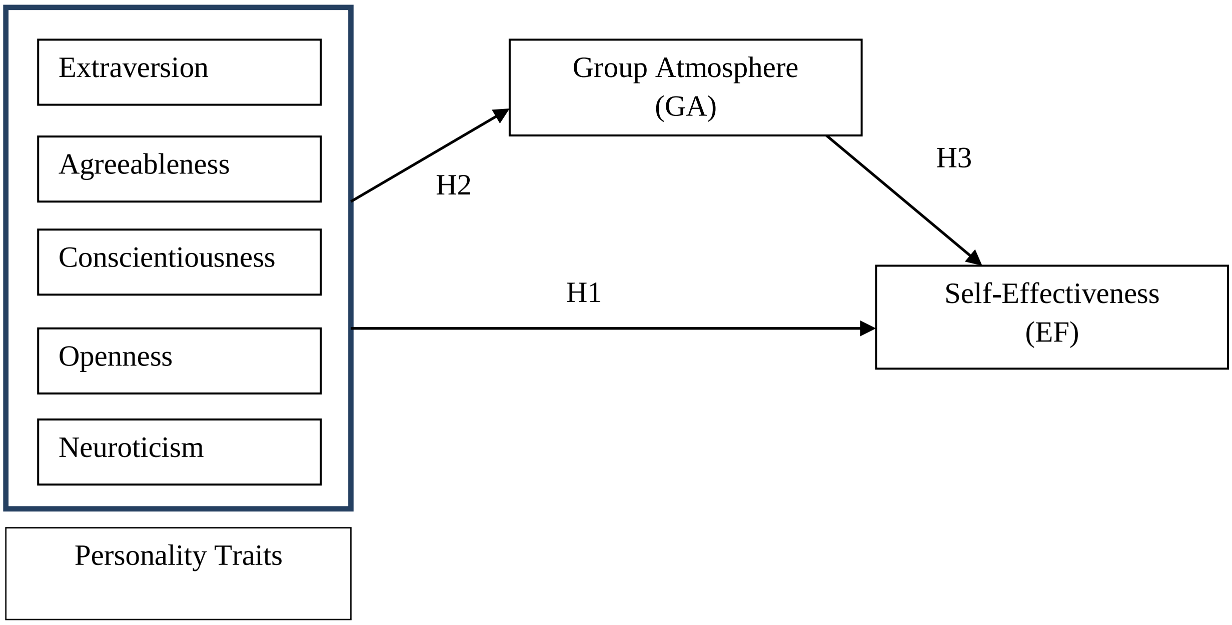

Figure 3: Conceptual Model
Source: Authors' own construction

3.1 Personality Traits and Self Effectiveness

Prior researches linked the big five characteristics and self-effectiveness (Judge & Ilies, 2002; Judge, Jackson, Shaw, Scott, & Rich, 2007; Pandey & Kavitha, 2015; Perera & Fonseka, 2011; Zięba, Surawska, & Zalewska, 2018).

Extroversion increases others' positive responses that can raise self-effectiveness (Judge & Ilies, 2002). Neuroticism, on the other hand, increases anxiety that lowers self-effectiveness (Schmitt, 2008). In addition to these findings, the impacts of the big five traits on self-effectiveness are inconclusive, but the most coherent determinants appear to be conscientiousness and neuroticism (Judge, et al., 2007).

To test the relationship between personality traits and self-effectiveness, the following hypothesis is proposed;

H1: Personality traits of a virtual team member is likely to influence his/her personal effectiveness

3.2. Personality traits and group atmosphere

Bradley and Hebert (1997) found that personality types are an important factor in successful team performance in the investigation of personality type and team performance. The author suggested finding that organizations wishing to develop effective teams need to analyze the personality-type compositions of these groups and help team members understand their own personal attributes as well as appreciate the other team members' contributions.

The personality of team members plays an important role or effective team composition according to the output of Gilal et al. (2017). Luse et al., (2013) found that personality traits affect individual willingness to trust and collaborate with virtual teams in the technology-based communications environment. Vreede, Boughzala, Vreede, and Reiter-Palmon (2017) have found to be linked both to the nature of group interactions and to virtual team performance. Personality-based trust in a virtual team environment has also been found to affect overall levels of trust (Sarker, Valacich &Sarker, 2003). In the Big Five model, where emotional stability is used as opposed to neuroticism, Bell (2007) has identified that team performance was found to be positively affected by all five dimensions. This leads to the next hypothesis;

H2: Personality traits of a virtual team member is likely to influence group atmosphere

3.3 Group atmosphere and self effectiveness

Employees portray personal effectiveness as the extend to which they have adhered to their work specifications or the degree of their personal productivity. The atmosphere of the work environment could have a powerful influence on individual effectiveness and productivity (Arthur, 1994; Donald, et al., 2005).Organizational cultural methods and its environment that enhance the potential of employees to encounter their duties in ways they deem as constructive and satisfying are therefore likely to be associated positively to personal effectiveness. According to Dubé and Pare (2001) findings, trust-building relationships are difficult in short-term virtual work making virtual team performance lower than the face-to-face team. Choi et al. (2003) found that their behavior and interactions are affected by the perception of climate by group members. Based on the findings, Powell et al. (2004) stated that when virtual team members do not have enough time to build trust slowly, team members assume that others are trustworthy and begin to work as if the trust was already in place while seeking confirmation or disconfirmation of evidence throughout the project duration.

To test the relationship between the group atmosphere and self-effectiveness, the following hypothesis was drawn:

H3: Group atmosphere is likely to influence virtual team members' self-effectiveness

3.4. Personality traits, group atmosphere and self effectiveness

The relationship between personality, group environment and self-effectiveness in a virtual setting is not examined in previous researches. To fill the gap this study aims to identify the mediation effect of group atmosphere between personality and self-effectiveness.

To test the mediation effect, the following hypothesis was drawn:

H4: Group atmosphere is likely to mediate the relationship between personality characteristic and team member effectiveness

4. Research methodology

4.1. Population and sample

This study is based on software engineers who work in a virtual team project. The segment of virtual team employees is not recognized and is considered a hidden segment of the working population in Sri Lanka. Therefore, there are not many data available for virtual team statistics separately to identify the population. Based on the pilot survey population is estimated as 500 which has to be determined based on the literature. The required sample size is based on factors proposed in the data analysis techniques (Malhotra & Dash, 2011) and 100 is the minimum sample when the model contains five or few constructs (Hair, Black, Babin, & Anderson, 2014). Cliff (1987) suggests a sample size of 150 for 40 item statements on a scale. According to Hair et al. (2014), the number of factors to be evaluated and the more appropriate sample size would have a ratio of 10:1 would be at least five times as many observations. In multivariate studies involving multiple regression analyses, the sample size should be as big as the number of variables in the research multiple times (ideally 10 times or more) (Roscoe, 1975). Therefore, 200 samples proposed for this study, which is deemed adequate, based on the number of constructs. When drawing the sample, convenience-sampling approach (non-probability sampling) was used. The approach involves gathering information from the members of the population who are conveniently available to provide it (Cavana, Delahaye, & Sekeran, 2001).This study carried on with a quantitative research methodology, which inquires of an identified problem based on a theory composed of different variables.

4.2. Data collection

The self-completion questionnaire was used as the primary tool for collecting data, as it enables quantitative analysis. The questionnaires were designed in five and seven-point Likert scale, where each question from strongly disagree to strongly agree scale; ranging from 1 to 5 and strongly not to a lot; ranging from 1 to 7.The predefined measurement scales by the prior researchers were adopted and for the relevant variable five and seven-point scales were used. Personality trait and self-effectiveness were measured by five-point Likert scale and group atmosphere was measured by seven-point Likertscale (Colman, Norris & Preston, 1997).The study questionnaire consisted of four main sections. The first section relates to the demographic information of the respondent with five questions and the second section attempts to identify the personality of the respondents with fifty question items. The measurement scales already established were modified and used in the second section to measure the study variables (Goldberg, 1992). The third section contains questions regarding self-effectiveness with fifteen questions, which retrieved from existing measure (Pareek, 2001) and the fourth section contains questions related to team atmosphere with thirteen questions (Jehn & Mannix, 2001).Questionnaires have been distributed online. Out of 200 distributed questionnaires, 187 questionnaires were received, which reports the response rate of 93%. Among them, 14 incomplete questionnaires were removed and the rest 173 questionnaires were used for the initial screening process, which makes the effective response rate as 86%.

4.3. Identification of variables and operationalisation

This study consists of three different types of variables; PT considered as the independent variable, EF as the dependent variables and GA as a mediator variable.PT has five indicators such as extroversion (EX), agreeableness (AG), conscientiousness (CON), openness to experience (OE), and neuroticism (NEU) whereas EF has three indicators such as perceptiveness (PE), disclosure (DI) and openness to feedback (OF). GA contains five items as openness to communication (OC), trust (TR), cohesion (CO), respect (RE) and liking (LI). Definitions and measures for the study variable were adapted through a rigorous literature survey. Table 1 summarizes the source of measurement items.

Table 1: Constructs and measurement items

Variable		Operationalization	Source
Personality Traits	Extroversion Agreeableness Conscientiousness Openness to experience Neuroticism	Personality traits illustrate the trait behaviors of opinions, emotions and behaviors of individuals.	Scales were adapted from Goldberg (1992)
Self Effectiveness	Disclosure Openness to Feedback Perceptiveness	Self-effectiveness is the belief of an individual in their inherent ability to attain goals that influence each area of human endeavor.	Adopted based on Pareek (2001)
Group Atmosphere	Trust Cohesion Openness to communication Respect Liking	A team atmosphere is described by open communication, respect, liking, cohesion and trusting interactions between members.	Adopted based on Jehn and Mannix (2001)

Source: Authors' own construction

5. Analysis of data and results

5.1 Reliability and validity

It is essential to determine the validity and reliability of measures used in the study before starting the inferential data analysis. The Cronbach's Alpha is considered as a measure of scale reliability. A reliability coefficient of 0.70 or higher is considered acceptable in most social science research situations according to Panayides (2013) and Nunnally (1978). Factor analysis is a statistical method used as a data reduction method and often used to determine a linear relationship between variables before subjecting them to further analysis. Hence, EFA has been used in this stage to test the validity of the construct and the Cronbach's alpha has been applied to test the internal consistency. The threshold value for higher factor loading is the standardized loading estimates, which should be 0.5 or higher, and ideally 0.7 (Hair, et al., 2014). In Likert or summative scales, ensuring the unidimensionality of items is an important requirement. This is used to ensure that items are closely related and represent a single concept (Hair, et al., 2014). Using Principle Component Analysis (PCA) as the extraction method and Varimax with Kaiser Normalization as a rotation method, EFA has performed.

5.2 Exploratory factor analysis

The below section is focus on the factor analysis of PT, EF and GA to identify the significant sub-questions for further analysis. In order to enhance the model fit, modification indices have been used and items with standardized factor loads below 0.5 have been removed. In removing these items stepwise process was followed where an item with the lowest factor loading was removed first (Hair, et al., 2014).

Initial EFA produces results as below;

- PT - Even though the basic scale consisted of five dimensions, EFA created 13 factors explaining 71.67% of the total variance. Accordingly, unidimensionality is not well demonstrated in PT.
- EF - EFA created five factors explaining 65.66% of total variance where the basic scale consists of three dimensions. Therefore unidimensionality is not well demonstrated.
- GA - Five significant factors explaining 86 % of total variance with 13 items generated which occupied the theoretically defined locations, with respect to factor loading.

In the initial EFA, unidimensionality is not well established in PT and EF. Specifically, EFA has created 13 factors for PT variable contrary to 5 identified through the literature and 5 factors created for EF identified as 3 from literature. EFA produces factors based on statistical results, not from theory (Hair, et al., 2014). Proper factor estimation does not mean meeting only the statistical requirements but also there should be a conceptual foundation to support the results (Hair, et al., 2014). Therefore, in this study it is decided to use a theoretically derived number of factors for further analysis since allowing statistical outcomes to drive the research process it would dilute the theoretical significance of the model (Hooper, Coughlan, & Mullen, 2007). Based on the step-wise process, Twenty-one items were dropped from PT, 2 items removed from EF and no items were dropped from GA. After the dimension reduction Cronbach alpha value calculated for each construct as a whole and dimension, which ensures the reliability (Results summarized in Table 3).

Table 2: KMO results

	KMO Value	Bartlett's Test of Sphericity
PT	0.871	0.000
EF	0.747	0.000
GA	0.801	0.000

According to Table 2, KMO measure for all the constructs is above 0.6 indicating the sample is adequate. Bartlett’s of sphericity test is significant for all construct which indicating sufficient correlation exists among items to proceed. Further Table 3 depicts internal consistency of three construct and their dimensions.

Table 3: Cranach's alpha value

Variable	Dimension	Cronbach's Alpha	
		Dimension	Construct
PT	EX	0.759	
	AG	0.805	
	CON	0.729	0.814
	OE	0.834	
	NU	0.865	
EF	PE	0.741	
	DI	0.727	0.794
	OF	0.769	
GA	TR	0.894	
	RE	0.943	
	LI	0.912	0.896
	OC	0.911	
	CO	0.872	

5.3 Construct validity

Construct validity examine the degree to which a study measures or intends to measure what it supposed to measure and it identifies whether the operational definitions of construct represent its true conceptual context (Hair, et al., 2014). In order to obtain construct validity, certain conditions must be met such as content validity, unidimensionality, convergent validity, discriminant validity and reliability (O'Leary-Kelly & Vokurka, 1998).

Convergent validity analyzes which extent the defined scale positively correlates with other similar measures of the construct (Malhotra & Dash, 2011).The average variance extracted (AVE) was calculated by the indicators equivalent to each of the study constructs to evaluate the convergent validity.It implies a suitable convergence when AVE is 0.5 or high (Hair, et al., 2014; Bagozzi & Yi, 1988). Nevertheless, Fornell and Larcker (1981) said that if the composite reliability exceeds 0.6, AVE of less than 0.5 can be accepted; in this scenario, convergent validity is still contemplated sufficient. Therefore, AVE value higher than0.45 is accepted in this study. AVE is measured for each latent construct in the model. CR, which calculates from the squared sum of factor loadings for each construct and the sum of the error variance terms for a construct is also used to guarantee the convergent validity. CR values above 0.6 are deemed desirable (Hair, et al., 2014; Bagozzi & Yi, 1988). Table 4 represents the CR and VIF values of each construct and each dimension of the study respectively.

Table 4 shows that the Average Variance Extracted (AVE) of the measures exceeds the recommended level of 0.5 for construct PT (0.58), EF (0.51) and GA (0.76). Therefore, it can be concluded that all the aforementioned constructs are providing evidence for convergent validity.

Table 4: CR and AVE for Each Construct and dimension

Construct	Dimension	AVE	CR
	EX	0.46	0.81
	AG	0.63	0.92
	CON	0.56	0.83
	OE	0.66	0.92
	NE	0.59	0.91
PT		0.58	0.88
	PE	0.57	0.80
	DI	0.49	0.80
	OF	0.48	0.82
EF		0.51	0.80
	TR	0.74	0.88
	RE	0.80	0.89
	LI	0.82	0.90
	OC	0.74	0.89
	CO	0.72	0.89
GA		0.76	0.89

Dimensions PE and DI and OF are having AVE value lesser than 0.5, but higher than 0.45. Each dimension composite reliability (CR) are between 0.80 and 0.93, higher than the standard 0.7; Comply with the aforementioned convergent validity of each dimension and construct inspection standards, the various aspects of this study have convergent validity.

Discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair, et al., 2014). High discriminant validity indicates that the construct is unique and captures some phenomena where other measures do not capture. The correlation coefficient of the two dimensions below the AVE's square root indicated that the two dimensions had a discriminating validity (Fornell & Larcker, 1981; Gaski & Nevin, 1985). Following Table 5 and Table 6 represent the squared correlation values of each construct and each dimension of the study respectively.

Table 5: Squared correlation for each construct

	PT	EF	GA
PT	**0.58**		
EF	0.190	**0.51**	
GA	0.228	0.461	**0.76**

Note: Diagonal values are AVE, and values below diagonal are squared correlations among constructs

Table 6: Squared correlation for each dimension

	EX	AG	CON	OE	NEU	PE	DI	OF	TR	LI	RE	OC	CO
EX	**0.46**												
AG	0.09	**0.63**											
CON	0.21	0.14	**0.56**										
OE	0.32	0.12	0.25	**0.66**									
NEU	0.23	0.04	0.10	0.16	**0.59**								
PE	0.15	0.01	0.05	0.07	0.04	**0.57**							
DI	0.27	0.07	0.16	0.23	0.12	0.48	**0.49**						
OF	0.14	0.00	0.12	0.11	0.14	0.07	0.15	**0.48**					
TR	0.16	0.03	0.13	0.13	0.07	0.07	0.16	0.15	**0.74**				
LI	0.14	0.06	0.12	0.12	0.06	0.06	0.08	0.09	0.32	**0.82**			
RE	0.28	0.35	0.11	0.12	0.05	0.13	0.12	0.10	0.23	0.17	**0.80**		
OC	0.31	0.09	0.09	0.23	0.04	0.08	0.20	0.08	0.20	0.18	0.25	**0.74**	
CO	0.28	0.14	0.14	0.16	0.12	0.06	0.21	0.09	0.22	0.14	0.20	0.29	**0.72**
AVE	0.46	0.63	0.56	0.66	0.59	0.57	0.49	0.48	0.74	0.82	0.80	0.74	0.72
CR	0.81	0.92	0.83	0.92	0.91	0.80	0.80	0.82	0.89	0.88	0.89	0.90	0.89

Note: Diagonal values are AVE, and values below diagonal are squared correlations among constructs

Table 5 and Table 6 shows that the bold number in the diagonal is the average variance extracted (AVE), which is always greater than the correlation values. These results suggest acceptable discriminant validity for the study measures.

Accordingly, as per the result of the analysis in this section, the validity and reliability of the measures were ensured in different aspects. Therefore, the next section of the chapter focuses on the regression analysis and hypothesis testing.

5.4 Regression analysis and hypothesis testing

This study proposes a few relationships between study variables based on the literature. Direct relationships have proposed between personality trait and member effectiveness in the virtual team environment. This direct relationship has proposed to be intervened by the group atmosphere. Accordingly, GA has been proposed as a mediator between PT and EF.

A variable should meet four conditions to function as a mediator such as

1) There should be a significant effect between the independent and the mediator variable
2) The mediator has a significant unique effect on the dependent variable
3) The independent variable influences the dependent variable considerably without the mediator variable
4) The effect of the independent variable on the dependent variable diminishes or decreases upon the existence of the mediator to the model (Baron & Kenny, 1986).

This research uses the three-step mediation analysis of Baron and Kenny (1986) to investigate the mediating impact on the direct path between the independent variables and the dependent variable. Sobel's (1982) test, the Aroian's (1944) test, and the Goodman's (1960) test further confirm the outcomes of the mediating impact.

In this study, regression analysis has been utilized to find out the significant impact of PT on EF, significant impact of GA on EF and the mediation effect of GA on the relationship between PT and EF. Generally, hierarchical multiple regression analysis used to answer the question as what is the influence of the independent variables on the dependent variable and what are the mediation factors influence on the dependent variable. This is investigated by analyzing different models as shown in Figure 2 to support the above-mentioned conditions

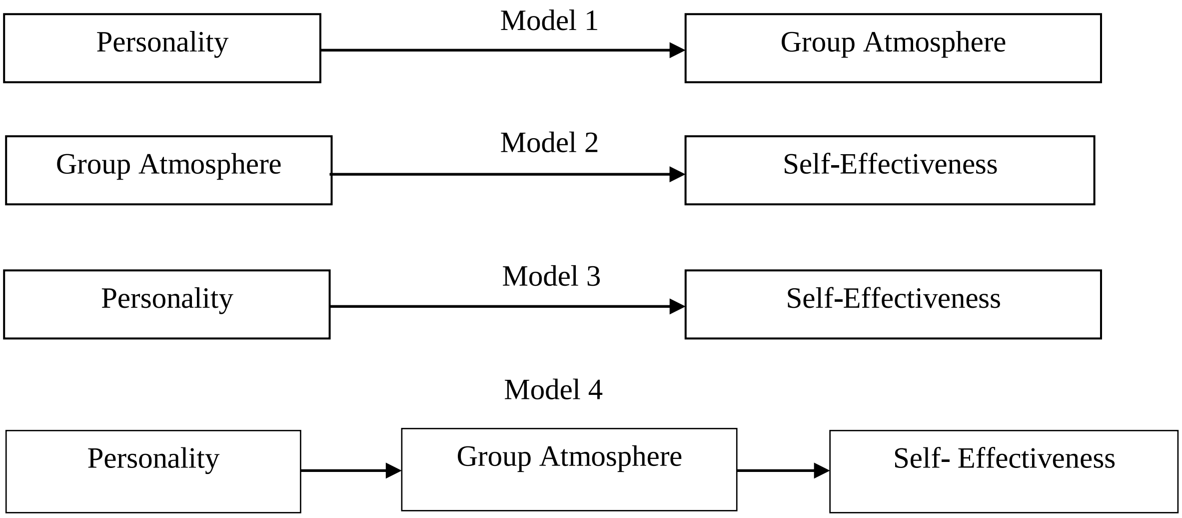

Figure 4 Path relationships
Source: Authors' own construction

Table 7: Path coefficient for models

Model	Coefficient			
	B	**β**	**t**	**p**
Model 1	0.573	0.436	6.193	0.000
Model 2	0.338	0.679	11.821	0.000
Model 3	1.260	0.478	6.940	0.000
Model 4 - PT	0.191	0.145	2.244	0.026
Model 4 - GA	0.304	0.610	9.442	0.000

According to the findings, the relationship between PT and EF is significant at 95% confidence level. In the coefficient analysis from Table 7, the regression equation Y=1.438 + 0.573x exhibits that the relationship between personality and virtual team member effectiveness. The study established that there existed a positive and significant relationship between personality and self-effectiveness and the findings are in accordance with previous researches. Therefore, according to the regression analysis, the hypothesis H1is accepted.

As per the results, the relationship between GA and EF is significant at 95% confidence level. In the coefficient analysis from Table 7, the regression equation Y = 1.603 + 0.338 x exhibits that the relationship between self-effectiveness and virtual team atmosphere. The study established that there existed a positive and significant relationship between team atmosphere and self-effectiveness and the findings are in accordance with previous researches. Therefore, according to the regression analysis, the hypothesis H2 is accepted.

The relationship between PT and GA is significant at 95% confidence level. This indicates that the independent variable is directly related to the mediating variable of the study. In the coefficient analysis from Table 7, the regression equation Y = 0.900 + 1.26x exhibits that the relationship between personality character and virtual team atmosphere. The personality characteristic has a significant positive relationship with the team atmosphere. Hence, according to the regression analysis, the hypothesis H3 is accepted.

According to the above analysis, the direct path between the independent variable and dependent variable become less significant compared to the direct relationship (P-value in direct path 0.000 and the indirect path 0.026) whereas the indirect path that occurs via GA is significant (P-value 0.000). Both the direct and indirect paths are significant yet β of the indirect path is lower than that of direct path (β of direct path is 0.436 and the indirect path is 0.145). Therefore, this indicates the existence of partial mediation between PT and EF by GA as the results of a mediator to outcome are controlled a previously significant relationship between the independent and dependent variable (Hair, et al., 2014).

Sobel test was conducted for testing the mediation effect in Table 8 (Preacher & Leonardelli, n.d.).

Table 8: Sobel, aroian and goodman test results

	Test Statistic	Std. Error	P-Value
Sobel Test	5.95220861	0.07154991	0.00
Aroian Test	5.93607986	0.07174432	0.00
Goodman Test	5.96846955	0.07135498	0.00

Hence, according to the regression analysis the hypothesis H4 is accepted.

Multiple regression analysis was performed to identify the most influencing traits and group atmosphere factors on self-effectiveness. Table 9 shows the multiple regression analysis results of PT and EF.

Table 9: Coefficient of personality traits and effectiveness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.113	.280		7.551	.000
	EX	.241	.053	.359	4.521	.000
	AG	-.081	.047	-.115	-1.732	.085
	CON	.145	.055	.194	2.644	.009
	OE	.121	.055	.175	2.228	.027
	NEU	-.086	.041	-.147	-2.101	.037

As per the results in Table 9, extroversion, conscientiousness, openness to experience and neuroticism are the significant determinants of self-effectiveness. Among these four items, extroversion is the most dominant determinant. Extroversion, conscientiousness, and openness to experience are positively affecting personal effectiveness whereas neuroticism has a significant negative relationship with self-effectiveness. Agreeableness is not significantly affected self-effectiveness in virtual teams.
Table 10 shows the multiple regression analysis results of GA and EF.

Table 10: Coefficient of individual team atmosphere factors and effectiveness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.971	.153		12.867	.000
	TR	.082	.032	.215	2.557	.012
	RE	.051	.023	.177	2.239	.027
	LI	.021	.031	.055	.693	.489
	OC	.057	.028	.171	2.082	.039
	CO	.060	.028	.168	2.099	.037

As per the results in Table 10, the team atmosphere dimensions – trust, respect, openness to communication, and cohesion are the positive significant determinants of self-effectiveness. Among these four items, trust is the most dominant determinant and cohesion identified as lease dominant factor. Liking is not significantly affected self-effectiveness in virtual teams.

6. Findings and discussion

This study established four main hypotheses based on previous studies, relevant and appropriate theories. The relationship of the five factors of personality trait and overall team member effectiveness was tested to examine the effect of personality trait as an exogenous variable on team member effectiveness as the endogenous variable based on the studies have linked the big five traits and self-effectiveness in different contexts (Judge & Ilies, 2002; Judge, et al., 2007). The positive significant relationship is proven by the results with $\beta = 0.436$ and Sig = 0.000. This result confirms the robust findings that suggest that a positive and direct relationship exists between overall personality and self-effectiveness. This aligns to the previous findings with respect to virtual teams (Pandey & Kavitha, 2015; Perera & Fonseka, 2011; Zięba, et al., 2018). This finding responds to the study's first research question and thus recognizes the impact that individual characteristics can have on the effectiveness of a member's virtual software engineering team in the IT industry. The most dominant personality trait determinant of self-effectiveness is extroversion and extroversion, conscientiousness, openness to experience and neuroticism are the significant determinants of self-effectiveness. Accordingly, the first finding of the study supports the existing knowledge claiming that self-effectiveness is directly and positively influenced by the personality traits of the employees in the virtual setting.

The results of the regression analysis indicate that the team atmosphere significantly and positively relates team members' effectiveness ($\beta = 0.679$, Sig = 0.000). It is identified that mutual trust is the most important determinant of self-effectiveness from a group environment where trust, respect, openness to communication, and cohesion are the positive significant determinants of self-effectiveness. With these findings, the second research question has been answered. Having good team environmental attributes may help the virtual team employees to achieve the goals effectively. Determining the preferable team atmosphere attributes to the virtual team environment may also help destination marketers to increase team effectiveness and productivity. In terms of the relationship between group environment attributes and overall member effectiveness, the findings show a similar outcome as prior empirical studies which suggests that positive group environment contributes to increasing the self-effectiveness of the member (Arthur, 1994; Donald, et al., 2005;Powell et al., 2004; Choi et al., 2003).

This study analyzes the mediating effect on the direct path between personality traits and self-effectiveness using the three-step mediation analysis (Baron and Kenny’s 1986). Mediation effect occurs only when the four conditions discussed above are satisfied. Accordingly, based on the study findings, it has been proven that personality traits have a positive significant effect on team atmosphere with $\beta=0.436$, $p=0.000$ which satisfy the first condition. Secondly, the impact of team atmosphere on the self-effectiveness also has proven with the study findings. Condition two was therefore also fulfilled. The next condition focuses the finding whether personality traits significantly affects the self-effectiveness in the absence of the team atmosphere. As per the study results, it has been validated that the personality traits of a team member have a positive significant impact on the member’s self-effectiveness, which satisfy the third condition. Though the direct impact of personality traits on member effectiveness was weaken with the presence of mediator variable, findings of mediator test validated that team atmosphere partially mediates this impact. By aligning the study findings, it can be concluded that establishing an effective and productive virtual team requires proper construction of positive group environment by the software firms.

7. Implications of the study

The conceptual framework developed in this study was constructed based on extensive support from prior literature and various theories from different disciplines in order to empirically explore the effects of member's personality traits on self-effectiveness and the mediating role of team atmosphere between personality traits and self-effectiveness. As with past research, this research contributes to further understanding the self-effectiveness and preferred personality in virtual team. The mediation effect based on Jehn and Mannix model of team atmosphere on the personality traits and self-effectiveness has not been investigated previously, such that this study contributes to the novel knowledge. As per the study findings, the proposed direct impact of personality traits on the member’s effectiveness was validated and the mediation effect was proven, thus the proposed empirical model can be used in future studies. Therefore, the primary contribution of this study was the development of a theoretical framework that linked between personality traits, self-effectiveness of the team member and virtual team atmosphere. Adding a new variable to the theory can be considered a valuable contribution, which will open up a new path for future research.

Not all personalities are suitable and not everyone fits into it. Therefore, the management of IT firms should consider the best of employees when selecting to virtual team projects. Findings of this study help the management practitioners of IT firm to understand the gravity of the group environment in a virtual team and the suitable personalities for the virtual setup. The study findings are therefore more appealing in providing significant inputs for IT firms and thus creating an environment with proper fit employees. Such management decisions will make it possible to increase the productivity and team effectiveness. Study findings are therefore enhanced with managerial implications.

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Management, Organization Studies and International Business

Effect of solid waste management practices on operational performance of apparel industry in Sri Lanka

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Abstract

The purpose of this study is to investigate the effect of solid waste management practices on the operational performance of apparel industry in Sri Lanka. Hence in its conceptualization, solid waste management practices and operational performance were considered as the independent and dependent variables respectively. The measures used for solid waste management practices were waste collection, waste reduction, waste reuse and waste recycling. The operational performance was measured using operational cost, quality, and efficiency. The sample of the study comprised 60 garment factories which used solid waste management practices. A questionnaire was used as the main tool to gather data from Operations Managers of the selected factories. Descriptive statistics, correlation and regression analyses were used to analyze data quantitatively. Findings of the study concluded that waste management practices positively impact on operational performance of the garment factories. Further, it was found that, proper waste collection (segregation management) as the mostly used waste management practice by the garment factories.

Keywords: Apparel industry; Operational performance; Solid waste management practices

1. Introduction

Increasing population levels, booming economy, rapid urbanization and the rise of community living standards have greatly accelerated the waste generation rate. Waste is an inevitable product of the society and one of the greatest challenges for future generations is to understand how to manage large quantities of waste in a sustainable way. Waste refers to liquid waste, solid waste and air pollutants. Waste management has become one of a major concern in environmental issues in all around the world. As only one aspect of waste, solid waste includes discarded or abandoned materials arising from domestic, commercial, industrial, and institutional activities in urban areas (Hagerty, Pavoni, & Heer, 1973). The solid waste makes a huge impact on natural environment and poses severe risks when these materials remain a longer period without removed, burned or washed away. In this respect, solid waste has been identified as a significant matter in waste management. According to Hoornweg and Bhada-Tata (2012), solid waste volume within

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the world involves 1.3 billion tons as per year solid waste and that will be led to create 2.2 billion tons per year by 2025. Developing countries have already been dealing with growing populations, money scarcity and limited resource availability to handle environmental problems that they will require to deal with 2025.

Improper handling and disposal of solid waste constitute serious problems and result in deterioration of urban environment in the form of air, water, and land pollutions that pose risks to human health and cause serious environmental problems (Khajuria, Yamamoto, & Morioka, 2008). According to the real context, unmanaged development has impacted on the production of waste in different ways and it has strongly affected to the environment. Since waste is not well managed, people dispose the waste wherever possible. However, the environment has a limited capacity for waste assimilation. If a large portion of waste enters into the environment instead of being recycled or reused, the assimilating capability of the environment is put to sleep. Therefore, it seems to be challenging to make decisions on waste management addressing potential issues, which requires immediate attention on the issues as well as the strategic and integrated planning of such decisions and their effective implementation. The effective management of solid waste can reduce a negative effect to the environment and human health and it also supports the economic development and the quality of life. So, there may be a necessity of having a powerful solid waste management system. Lack of infrastructural facilities and negligence of industries to take proper safeguards can be recognized as key reasons for the issues related to the disposal of Industrial Solid Waste (ISW) (Beg, Saeed, Al-Muzaini, Beg, & Al-Bahloul, 2003). Hence, there seems to be big issues associated with managing ISW in the global context.

Sri Lanka as a developing country has prioritized the disposal of solid waste under environmental issues and with a national concern (Bandara & Hettiaratchi, 2010). When ISW is concerned, the term industrial waste means the all waste produced via industrial operations or made out of manufacturing processes (Abduli, 1996). According to Casares, Ulierte, Mataran, Ramos and Zamorano (2005), waste generation can be identified in the forms of paper and cardboards, glasses, plastics, wooden, metals, textiles and perilous waste. Large and medium industries located in identified commercial regions have some arrangements to dispose solid waste which includes industrial zones. However, troubles persist in small-scale industries. In some towns and cities in Sri Lanka, small-scale industries discover to dispose the waste haphazardly. It makes hard for local bodies to collect such waste, because it is not their duty. In some towns, industrial, residential and commercial areas are combined, hence all waste become intermingled (Austine et al. as cited in Liyanage et al., 2012). Therefore, it is a need of organizing proper collection and disposal of ISW.

The apparel industry is an export-oriented manufacturing sector in Sri Lanka, which has contributed significantly for the economic development of the country. Textiles are used widely in the design of items that support the basic human needs. The apparel industry has great relevance at the national level in terms of the manufacturing capacity and employment. Today, this industry occupies a pre-eminent position in Sri Lanka. The industry has grown over last three decades and has become one of the key foreign exchange earners in the country. Due to the rapid expansion of the industry in recent years, it has also caused to rapid generation of solid waste. The solid waste of apparel industry is mainly the fabric waste generated from the textile manufacturing process. According to Saheed et al (as cited in Jayasinghe, Basnayake, Amarathunga & Dissanayake, 2010), the garment industry consumes 19,000 to 38,000 tons of fabric annually and it produces garment-cutting waste consisting of 10 - 20% of fabric depending on production techniques and product range in the industry. The apparel industry in Sri Lanka then faces new challenges with increasing scrutiny for its environmental and social impacts. The composition analysis of textile solid waste is shown in Figure 1-1.

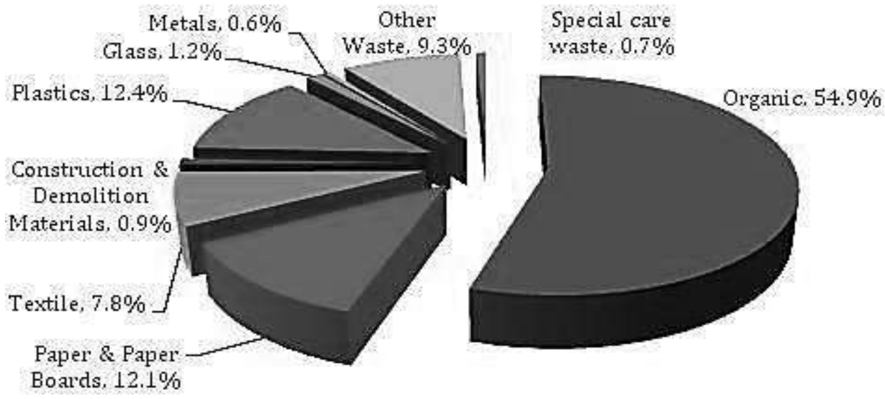

Figure 1-1: Composition analysis of textile solid waste
Source: Sri Lanka Recyclers Association (2017).

All products have an ecological impact. A significant amount of textiles produced annually, given that it is imperative that ways to reuse, recycle, properly dispose of or even reduce production needs more consideration. Nielsen and Schmidt (2014) reveals that the life cycle of textiles includes production, transport, use, and end-of-life. Production has the largest environmental impact and covers all procedures from material extraction to assembly and design finishes and cycle of textiles, production uses the greatest amount of water and releases the most carbon dioxide (CO_2) gases. In addition to CO_2 emission and water consumption, toxic chemicals are used during textile production. For natural materials such as cotton, its processing requires substantial amounts of chemical fertilizers and pesticides that pollute the soil and synthetic materials such as nylon and polyester which are made from non-biodegradable petrochemicals (Challa, 2014). The solid wastes generated by the textile industry also contained the said elements.

According to the practical scenario, the waste of garment factories is subject to open burning in the premises, otherwise it is transported to landfills or dump sites by private contractors or the factories' own transport. The landfilling leads to land infertility which will be a future problem. Furthermore, such ad hoc disposal methods result in serious environmental impacts. With development of the commercial activities, the issue of waste disposal has turned into a notable issue and most of the apparel manufacturing factories in Sri Lanka do not have appropriate solid waste disposal amenities in the manufacturing plant premises or in the region. At present, open dumping and burning are the fundamental practices of waste disposal.

As found by Weerakoon, Pilapitiya, Kotagama, and Senanayake (1996), open dumping of apparel industry's solid waste caused to the formation of leachate as it deteriorates, which can possibly contaminate both surface and groundwater sources and it would lead to aesthetic issues as well. Methane gas (CH4) is another result of decomposition in open dumping which is a significant ozone harming substance and a critical supporter of a worldwide temperature alteration. There is a risk associated with contamination of groundwater supplies due to leachates from open dumping of solid waste in the to the researchers' view, decomposition of organic fibers and Koggala Export Processing Zone (EPZ) (Liyanage et al., 2012). According yarns together with wool produces vast amounts of ammonia (NH3) other than CH4. NH3 is distinctly toxic in each terrestrial and aquatic environment and it can be toxic in gaseous form. It has the capability to increase Nitrogen (N) in drinking water, which can adversely have an effect on people. Cellulose-based synthetics decay at a faster rate than chemical-based synthetics. Synthetic chemical fibers can lengthen the adverse effects of each leachate and fuel production due to the period of time taken for them to decay. Instead of disposing in landfills, material waste additionally incinerated in big portions. As a result of emitting organic substances including dioxins, heavy metals, acidic gases and dirt debris, which are probably dangerous to each individual and the environment (Marciano et al., (2009) as cited in Jayasinghe et al., 2010). In line with Weerakoon et al. (1996) technological inadequacies in the incinerator which is used in Katunayake EPZ has resulted within the emission of black smoke which causes problems to the airport nearby. Zone authorities have already received complaints from the neighborhood and from the Katunayake International Airport about smokes. Therefore, alternative techniques to reduce the negative effect of textile production are being taken into consideration.

According to Anon (as cited in Jinadasa et al., 2015), distinct phases like systematic control of generation, collection, storage, transportation, source separation, processing, treatment, recovery and disposal of solid waste reflect the real meaning of Solid Waste Management (SWM) practices. Lack of such effective methods for the treatment of industrial waste has caused severe socio-economic and ecological problems (Halla & Majani; Perera as cited in Liyanage et al., 2012). This has caused to form many social and environmental consequences such as surface and ground water contamination, soil pollution, air pollution, global warming, health issues, property issues, aesthetic problems and so on. These consequences have a great impact on sustainability. Therefore, SWM cannot ensure the quality of environmental sustainability regarding the apparel industry.

SWM is a vital part of the urban environment and it can be recognized as an instrument for planning the urban infrastructure to ensure a safe and healthy human environment, while considering the promotion of sustainable economic development. Due to rapid population growth and urbanization in Sri Lanka, it is not uncommon to see that Local Authorities are struggling with solid waste management practices. Management of ISW is not the responsibility of local administrative bodies. Industries generating solid waste have to manage such waste by themselves in meeting their social responsibility.

Waste management is not only concerned with output of the operations that damage the environment but of great essence is the input of resources also as totality of systems and processes involved in the operation of any organization. For firms to manage cost effectively, manage its operations efficiently and have flexible undertaking, they need to practice best waste management practices (McCrea, 2010). Thus, methods used by companies to dispose waste do not only affect the environment but also the operational performance. Accordingly, this research was done to answer the question of:

What is the impact of solid waste management practices on operational performance of the apparel industry in Sri Lanka?

2. Literature review

2.1 Solid Waste Management (SWM)

According to several researchers, SWM can be identified as the solution for solid waste in developing countries due to it decreases or cuts the negative impacts associated with environment and health, encourages the economic development and supports to improve quality of life within the providing livable environment for the future. The usage of an effective SWM model can ensure the financial sustainability of developing countries too. However, SWM has become a global challenge, especially in developing countries due to its adverse environmental effects (Butu, Ageda, & Bichi, 2013). When we focus our attention to effective SWM practices, its benefits to the society such as clean, safe and healthy environment for human habitation cannot be undermined. Further, Schubeler, Christen and Wehrle (as cited in Harir, Kasim, & Ishiyaku, 2015), elaborated that the goals of SWM encompass to protect public health and safety, promote environmental quality and sustainability, support economic productivity and employment generation. Hence, SWM has a crucial role in human wellbeing and sustainable development. Therefore, the authorities have to carry out some rules and policies to motivate people for reduce the adverse impacts of overflowing of waste bins and accumulated wastes on road sides. Strict rules must be applied to management related activities and strict regulations need to be carried out over the control related activities and the level of public attention on SWM also ought to be improved (Hai & Ali, 2005).

Strategies for avoiding or minimizing of wastes and extracting maximum benefits from waste materials are shown in the "waste management hierarchy". They are to recover the value from wastes and final disposal of wastes. Figure 2.1 shows the waste management hierarchy where waste prevention is the most efficient option, while landfilling is the least efficient option with the highest environmental impact. TWM relies on quality, condition and fashion accuracy and there are four basic paths for the used textiles. According to researcher's view textiles can be used again through formally or informally recycled into new textile and energy can be recovery thorough the incineration as the final disposal option Landfilled, waste dumps can be mentioned. Most industrialized nations have adopted the waste management hierarchy and used as the menu for developing municipal SWM strategies.

Figure 2.1: Hierarchy of the solid waste management
Source: Textiles from waste to resources in Denmark

An effective waste management system requires to consider the options mentioned above from the point of waste generation to the final disposal. They should be incorporated in different steps or components of waste management which are described in the following section. For Geng (as cited in Karunasena & Kannangara (2013), IWM involves the collection, transportation, processing, recycling and disposal of waste materials. According to Sharma, Pandey, and Muzumdaar (2010), there are six stages in the process of SWM namely; monitoring, collection, transportation, processing, recycling and disposal. Thus, SWM is referred to sorting, storage, collection and transport of discarded materials either for recycling or for final safe disposal, usually in sanitary landfills.

One of the challenges for SWM in developing countries is the lack of provision of infrastructure and services for the practice. According to Butu et al. (2013), management of municipal solid waste disposal is a global challenge especially in developing countries due to the environmental impacts. For the authors, efficient collection and safe waste disposal methods are most important but seemingly, there is a difficult and expensive aspect of waste management in developing countries. Therefore, ineffective collection systems are cited as a big challenge for SWM in most developing countries.

2.2 Solid waste management practices

The waste management practices which have been mainly adopted in the apparel industry are the waste collection, composting and reduction, reuse and recycling (Bohdanowicz, 2006; Iwanowski & Rushmore, 1994).

Promotion of waste reduction, reuse and recycle

Companies have been pushed by competitive pressures towards the cost reduction and performance improvement of operations to provide better quality products to very demanding markets. The approach of waste reduction and performance has been gaining importance in organizations operations (Gurumurthy & Kadali, 2011; Taj & Morosa, 2011). Waste reduction can be achieved through the implementation of lean production systems that include assessing current situation and designing a production system based on lean system concepts and techniques (Womack & Jones, 2003).

Emphasis has been placed on the three R: reduction, reuse and recycle. This helps to involve in less waste and increased material recovery. Waste reduction is achieved through waste minimization at its source so as to minimize the quantity required to be treated and disposed of. This can be achieved through better product design and or process management. Waste recycling is the process for recovering waste products as inputs or resources. Promotion of waste re-use can be realized through using waste as an input for other purpose. Waste can as well be transformed into a form that is less costly or difficult to dispose of a process known as waste transformation.

Collection and disposal of waste

Waste collection and disposal should be undertaken regularly and people from economically backward section may be employed for this purpose. The collected non-degradable materials should be removed using covered trucks and trailers. Care should be taken not to spill the waste during transportation. Disposal of waste should be undertaken in prescribed scientific manner. A sanitary landfill designed specifically for the final disposal of waste should be built (MsCaethy et al., 1998).

SWM involves activities associated with six basic principles of waste generation, storage, collection, transfer and transport processing and disposal (Sharholy, Ahmad, Vaishya, & Gupta, 2007). The amount of waste generated and the way it is disposed damages the environment (Choe & Fraser, 1999). Uncollected wastes cause the bad smell, drain blockage, invites scavengers, general public nuisance and become good breeding site for insects.

Operational performance

Operational performance of an organization as defined by Kaplan and Norton (1992) and Ghalayini, Noble, and Crowe (1997) revolve around cost, quality, efficiency and flexibility. Several authors argue that operational quality performance is influenced by both internal and external factors (Garvin & Quality, 1984; Rust & Oliver, 2000). Hence, internal operational performance relates to the internal functioning of a firm in the forms of increase in productivity, improvement in efficiency, and reduction in cost and waste. Then operations managers are increasingly challenged to find ways to reduce cost without sacrificing the quality standards expected from the product. Operational costs refer to the expenses incurred during the normal operation of the garments. Examples of these costs include fabric cost, labor cost, energy cost, water cost, waste management cost among others (Mensah, 2006). The operational costs should be minimized in order for an organization achieve the projected profits. Efficiency is the capability of an organization to deliver products or services to its customers in the most cost-effective manner, while ensuring the high quality of its products and services. It denotes the organization's ability to minimize the waste of inputs and maximize the utilization of resources so as to deliver quality and cheaper products and services to their customers. It is a useful measure for managing the available resources (Muhittin & Reha, 1990).

2.3 Solid waste management practices and operational performance

Waste management in the organizations is not only concerned with the output of operations that damage the environment but also of great essence is the input of resources as well as totality of systems and processes involved in the operation of production facilities (Kirk & Pillet, 1998; Gil, Jimenez, & Lorente 2001)). Kirk (1998) indicates that proper waste management practices are of much value to operational performance of the firm. It improves efficiency in service delivery, reduces operational cost through efficient operations, minimizes time spent to offer services, enhances quality of services and productivity. As a result, image of the organization is improved in the eyes of the public to gain competitive advantage (Kirk & Pillet, 1998).

Organizations are faced with challenges of cost containment, more demanding customers in terms of quality and speed of service delivery. The success of any organization is largely dependent upon its flexibility to the ever changing internal and external environment. Adoption of best waste management systems reduces operational cost through waste minimization and efficient production processes. By practicing waste management, organizations can improve their hygiene standards and as a result, the quality of their products and services are improved.

3. Research methodology

The conceptual research framework developed for the study is shown in Figure 3.1. The independent variable of the framework presents the 'solid waste management practices' and the 'operational performance' is presented for the dependent variable. Further, solid waste management practices were measured through the waste collection, waste reduction, waste reuse and waste recycling.

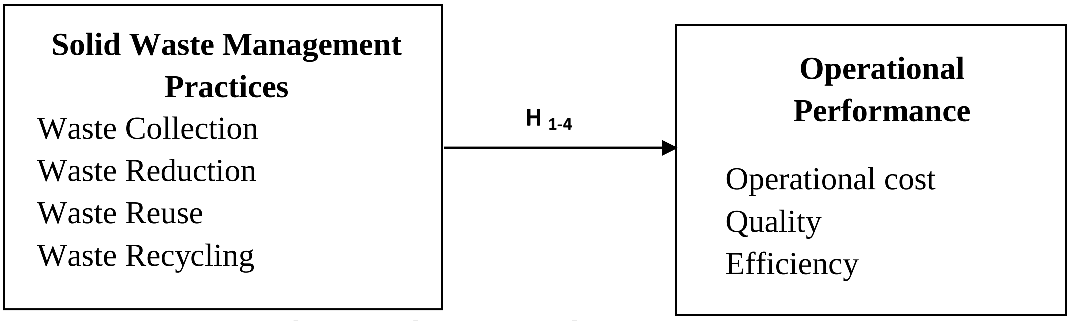

Figure 3.1: Conceptual Research Framework

Accordingly following four hypotheses were developed for the study.

H1: There is a significant impact of waste collection practice on the operational performance
H2: There is a significant impact of waste reduction practice on the operational performance
H3: There is a significant impact of waste reuse practice on the operational performance
H4: There is a significant impact of waste recycling practice on the operational performance

A pilot survey was conducted to identify the garment factories which practice solid waste management in Sri Lanka. The pilot survey is a strategy used to test the questionnaire using a small sample size compared to a planned sample size. In this phase of conducting a survey, a questionnaire was administered using the convenient sampling method.

The study covered Colombo and Kalutara districts which included Panadura Export Processing Zone and Rathmalana Export Processing Zone. There were 60 garment factories identified as the factories which use the solid waste management practices. The research had to limit the sample size into 40 garment factories due to the barriers in accessing to the company internal information regarding their business practices. As the study was a cross structural deductive approach, data was collected through structured questionnaire. The questionnaire was administered to the garment operations managers in selected garments in the study area. The questionnaire is comprised with three sections. Section A contained generic information about garment factories, section B contained information on waste management practices and section C contained information on the determinants of garment operational performance.

Statistical measures such as mean, standard deviation and percentages were used. Linear regression analysis and correlation coefficient were used to measure the impact/ relationship of solid waste management practices and operational efficiency.

4. Data analysis

The data obtained from the survey questionnaire were tested for their validity and reliability. Accordingly, the Cronbach's alpha value is above 0.7, hence the reliability of the variables could be assured (Table 4.1).

Table 4.1: Reliability level of the variable

Construct	Cronbach's alpha value
Waste Reduction	0.764
Waste Re-use	0.702
Waste Recycling	0.718
Waste collection	0.731

Source: Survey results (2018)

Table 4.1 shows the Cronbach's alpha values for the variables in the survey questionnaire. The values of the tested variables are above 0.7 which can be accepted. In fact, the questionnaire used in study is reliable.

4.1 Types of solid waste

The responses of respondents on solid waste of the garment factories were collected using different sub-scales of fabric waste, ployethene, plastics, glass, cardboards, paper, food waste and e-waste. Table 4.2 and Figure 4.1 show the percentage values of each types of solid wastes.

Table 4.2: Types of Solid Waste

Type of solid waste	percentage
Fabric waste	100
Ployethene	100
Plastics	100
Glass	75
Cardboards	100
Paper	100
Food waste	100
E-waste	40

Source: Survey results (2018)

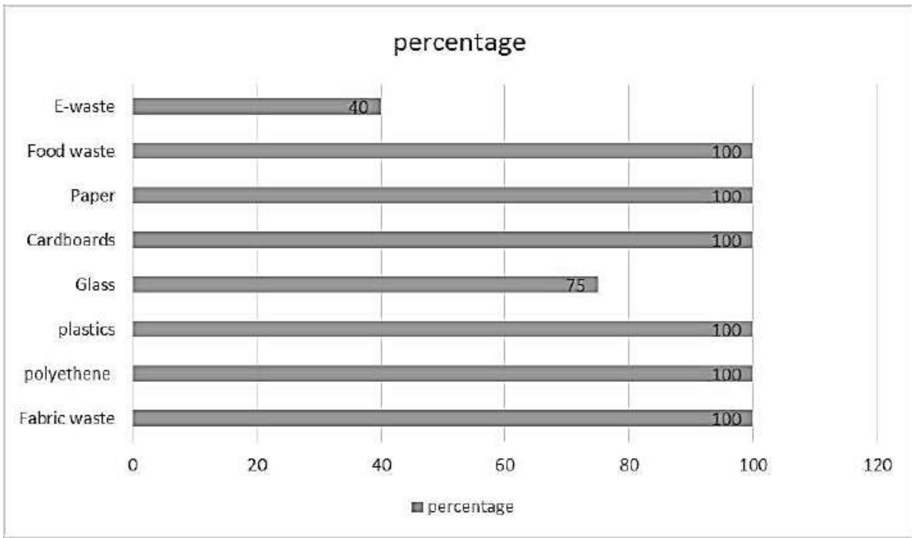

Figure 4.1: Types of solid wastes
Source: Survey results (2018)

Fabric waste
The solid waste of the apparel industry happens mainly as the fabric waste that is generated from the textiles manufacturing process. Clothing fabric generally consists of composites of cotton (biodegradable material) and synthetic plastics. According to the collected data, almost all garment factories (100%) are generating fabric waste from their manufacturing process. Wool, cotton, Polyester, Nylon, padding offcuts and viscose can be considered as fabric wastes.

Polythene
Polythene waste is generated in the garment industry due to the packaging material of the accessories and fabric. According to the collected data, almost all garments factories (100%) are generating polythene waste from their raw material purchasing process to manufacturing process.

Plastics
Plastic waste is generated as empty thread cones and packaging strapping. According to the collected data, almost all garment factories (100%) are generating plastics waste from their manufacturing process and raw material purchasing process.

Glass
Glass is widely used as a packaging material for fabric dye, chemicals and machine oil. According to the collected data majority of garments (75%) are generated glass waste from their manufacturing process.

Cardboard waste
Cardboard waste is generated in the garment industry from the packaging material of accessories and fabric brought into the factory. Cardboards wastes are largely generated from process of importing raw materials and exporting apparels. Cardboard waste consists with large no. of undamaged cardboard

boxes. According to the collected data almost all the garments (100%) are generated cardboard waste from their manufacturing process and raw material purchasing process.

Paper

Paper wastes are generated because certain garments when manufactured in different colours and sizes, require many markers (which is a sheet of paper that contains all the components of a garment that is needed to be cut for a particular style and size), resulting in the generation of additional paper waste. The majority of the paper used are demy papers. According to the collected data all most all the garments (100%) are generated paper waste from their manufacturing process.

Food waste

Food waste is generated from any of the four stages of the food supply chain: growers, processors, retailers, and consumers. Therefore, food waste is generated in garments due to human consumption. According to the collected data, almost all the garments (100%) are generating food waste.

E-waste

E-waste arises from usages such as electrical devices, discarded computers, office electronic equipment and florescent bulbs. According to the collected data (40%) of sample belongs to the generated e-waste.

4.2 Quantity of waste

The responses regarding the quantity of solid waste of the garment factories were collected using different sub-scales of below 5000 kg, 5001-10,000 kg and above 20,000 kg. Table 4.3 shows the percentage values of each types of solid wastes.

Table 4.3: Quantity of waste

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Below 5000kg	6	15.0	15.0	15.0
	5001-10,000kg	16	40.0	40.0	55.0
	Above 20,000kg	18	45.0	45.0	100.0
	Total	40	100.0	100.0	

Source: Survey results (2018)

The quantity of waste generated in the textiles companies depends on the scale of the garment. The majority of garments with percentage of 45% produces waste in large scales which is in average above 20,000 kg annually. 40% produces waste in moderate scales which is in average between 5001-10,000 kg annually.15% of garments produces in small scales which is in average below 5000 kg annually.

4.3 Solid waste management practices

Respondents of the study were required to complete a grid ranking for their perception on the importance of various waste management practices of the respective textile companies. The Likert scale with scores from 1 - 5 was assigned to rank the relative importance of the sixteen (16) item waste management practices listed out. The listed practices were categorized into five thematic areas of practices: waste reduction, waste reuse, waste recycling and waste collection. Table 4.4 presents descriptive statistical results of them.

Table 4.4: Descriptive statistics

Waste management practice	N	Mean	Std. Deviation
Waste Collection	40	4.885	0.271
Waste Reduction	40	2.941	0.341
Waste Re-use	40	2.783	0.402
Waste Recycling	40	2.533	0.515

Source: Survey results (2018)

It was observed that the procedure for waste collection as the most important waste management practice (Mean = 4.885, SD = 0.271). This shows that most of the garment factories have practiced a proper segregation system as their solid waste management practice.

The mean value of the waste reduction practice was 2.941. It shows that some garment factories have positive attributes for waste reduction practices. The total standard deviation for waste reduction is 0.341 and it shows a very small difference in the responses obtained from the mean score.

The mean value of the waste re-use practice was 2.783. It shows that some garment factories have less important attribute towards the waste reuse practice. The mean value of the waste recycling practice was 2.533. It also showed that some garment factories have less important attribute towards waste recycling.

Table 4.4: Descriptive Statistics

Waste management practices	N	Mean	Std. Deviation
Waste Collection			
Extent of the use of dustbins in the operational areas	40	4.85	0.362
Proper pre-informed waste collection schedules	40	4.85	0.362
Use of properly colored bins for different type of waste	40	5	0
Use of collection containers, plastics bins or bags, municipal buckets to collect waste	40	4.85	0.362

Waste Reduction			
Buy raw material with less packaging	40	3.25	0.543
Proper supervision to reduce fabric wastage	40	2.95	0.221
Proper system for the inspection of raw materials received	40	2.8	0.405
Damaged items are resold to local buyers	40	2.95	0.221
Rejected apparels are resold to local buyers	40	2.95	0.221
Conducting waste management training programmes	40	2.75	0.439
Waste Re-use			
Reusable goods donate to poor people for their self- Employment	40	2.75	0.439
Send to reusable items to suppliers to reproduce new one	40	2.9	0.304
Produce by-products	40	2.7	0.464
Waste Recycling			
Deliver to municipality recycled collection trucks	40	2.9	0.304
Sell to private recyclers to incineration	40	2.35	0.662
Create new pieces of clothing from scraps of old clothes	40	2.35	0.58
Valid N (list wise)	40		

Source: Survey results (2018)

Table 4.5: Summary of Regression Analysis

Hypotheses	Relationship	Status	Justification
H1	Moderate Positive	Accepted	R^2= 0.311, F = 134.767, P = 0.000 b = 0.503, t = 11.609, P = 0.000
H2	Moderate Positive	Accepted	R2 = 0.267, F = 108.449, P = 0.000 b = 0.704, t = 10.414, P = 0.000
H3	Moderate Positive	Accepted	R^2 = 0.134, F = 45.939, P= 0.000 b = 0.578, t = 6.778, P = 0.00
H4	Moderate Positive	Accepted	R2 = 0.322, F = 141.490, P = 0.000 b = 0.590, t = 11.895, P = 0.000

Source: Survey Results (2018)

Waste collection practice and operational performance

The findings revealed that there is a positive but moderate relationship between waste collection practice and operational performance because the Pearson correlation is 0.567 and the p value is 0.000. The relationship is also significant because the p value is less than 0.001. Further the R square value is

0.322 (32.2%), this would mean that 32.2% of the variation in the garment's operational performance has been affected by the waste collection practice used. Hence Hypothesis 1 was accepted with the significant level of 0.000 which was below 0.05 level.

Waste reduction practices and operational performance

The findings revealed that there is a positive but moderate relationship between waste reduction practice and operational performance because the Pearson correlation is 0.558 and the p value is 0.000. The relationship is also significant because the p value is less than 0.001. Further the R square value is 0.311 (31.1%). This means that 31.1% of the variation in the garment's operational performance has been affected by the waste reduction practice. Hence Hypothesis 2 was accepted with the significant level of 0.000 which was below 0.05 level.

Waste re-use practice and operational performance

The findings of the study revealed that there is a positive but moderate relationship between waste re-use practice and operational performance because the Pearson correlation is 0.517 and the p value is 0.000. The relationship is also significant because the p value is less than 0.001. Further the R square value is 0.267 (26.7%). This means that 26.7% of the variation in the garment's operational performance has been affected by the waste red-use practice. Hence Hypothesis 3 was accepted with the significant level of 0.000 which was below 0.05 level.

Waste recycling practice and operational performance

The findings revealed that there is a positive but moderate relationship between waste recycling practice and operational performance, because the Pearson correlation is 0.365 and the p value is 0.000. The relationship is also significant, because the p value is less than 0.001. Further the R square value is 0.134 (13.4%). This means that 13.4% of the variation in the garment's operational performance has been affected by the waste recycling practice. Hence Hypothesis 4 was accepted with the significant level of 0.000 which was below 0.05 level.

4.4 Multiple regression analysis

This analytical tool was used to measure the impact of two or more variables at a time to the dependent variable. There were four independent variables used in the study as waste collection, waste reduction, waste reuse and waste recycling practices. For the analysis, coefficient of correlation, coefficient determination, t-test, and regression equation were calculated. Table 4.6 shows the model summary of results.

Table 4.6. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.675[a]	.455	.448	3.396

a. Predictors: (Constant), waste reduce, waste re-use, waste recycling and waste collection practices

Source: Survey results (2018)

As per the model summary results, the multiple R value is 0.675. This shows that collective relationship of independent variables (waste management practices) to the dependent variable (operational performance) is strongly positive.

The R Square represents the coefficient of determination. It measures the proportion of variation in one variable that is explained by the other. Here the R square value is 0.455 (45.5%). This means that 45.5% of the variation in operational performance has been affected by waste reduce, waste re-use, waste recycling and waste collection practices. Meanwhile the other 54.5% is affected by the other factors which were not included in this model.

Table 4.7: ANOVA results

ANOVA[a]

Model		Sum of Squares	Mean Square	F	Sig.
1	Regression	2845.646	711.412	61.669	.000[b]
	Residual	3403.084	11.536		
	Total	6248.730			

a. Dependent Variable: operational performance

b. Predictors: (Constant), waste reduce, waste re-use, waste recycling and waste collection practices

Source: Survey results (2018)

Table 4.7 shows that the multiple regression model has predicted the dependent variable significantly. In the last column, the "sig" value is .000. It shows the goodness of fit of the model. In other words, the regression model fits the data.

Table 4.8 identifies coefficients for the constant and the independent variables. Those values communicate a total change in the dependent variable if the independent variables increase from one unit. The significance of each independent variable tells whether to reject the variable or not.

Table 4.8: Coefficient Table

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.385	1.437		.268	.789
	Waste collection	.296	.057	.285	5.225	.000
	Waste reduce	.238	.049	.264	4.824	.000
	Waste recycling	.118	.077	.075	1.542	.124
1	Waste re-use	.315	.070	.231	4.473	.000

a. Dependent Variable: Operational performance

Source: Survey results (2018)

The regression of waste reduction, waste recycling, waste re-use and waste collection and operational performance using the data yielded the results shown in Table 4.8. The interpret, a, (Constant) equals 0.385 and the slope, b of waste reduce equals to 0.238, b of waste recycling is 0.118, b value of waste
re-use is 0.315 and b value of waste collection practices is 0.296. This shows how the dependent variable change when all the independent variables collectively impact on the dependent variable. Therefore, the estimated equation is:

Operational performance (γ) =0.385 + 0.238 (waste reduce) + 0.118 (waste recycling) + 0.315 (waste re-use) + 0.296 (waste collection).

In the table, under unstandardized coefficients, the Std. Error (Standard Error) or Standard deviation of b is estimated as 1.437, and the value of the t Statistic, 4.824 (waste reduce), 1.542 (waste recycling), 4.473 (waste re-use) and 5.225 (waste collection).

Table 4.8 shows the calculated value of Beta is equal to the 0.264 (waste reduce), 0.075 (waste recycling), 0. 231 (waste re-use) and 0.285 (waste collection). It says that there is a relationship between the waste reduce, waste recycling, waste re-use and waste collection practices to Operational performance. The significant value of all the 3 variables (waste reduce, waste re-use and waste collection practices) is below the 0.005 level. It means collective impact of the independent variables to operational performance is significant.

5. Conclusion and implications

5.1 Conclusion

The extent to which garment factories adopt the solid waste management practices

The results indicated that most garment factories under study have embraced the concept of solid waste management practices to some extent in their day to day operations. The mostly used practice is the proper waste collection (i.e. segregation management). Most respondents viewed waste collection method as a key practice to be, compared to other measures of solid waste management. However, it was found that few garment factories use textile waste as a recycle practice and some others use waste incineration.

Waste collection/ waste segregation

An important part of the solid waste management is scheduling the collection of waste regularly. Waste segregation means dividing the waste into dry and wet categories. Dry waste of apparel industry includes fabric waste, polythene, glass, cardboard, paper, e-waste, metal, and food waste. The wet waste typically refers to the organic waste which is usually generated by eating establishments and are heavy in weight due to dampness. Waste can also be segregated on basis of biodegradable or non-biodegradable waste. Segregating waste is not just of environmental importance, but of economic concern also.

As per the results of the study, it is clear that most selected garment factories have paid their more attention to collect the waste at its source in each operational area. Further, the Factory Managers and Supervisors introduce and advise every employee about the waste collection schedules in order to create a systematic waste segregation system.

A proper waste segregation system helps to implement the next levels of waste disposal. Basically, garment factories are required to separate waste into three categories: (1) recyclables including fabric waste, plastics, papers, cardboards, glass (2) polythene, and (3) food discards. The discards are collected daily from each operational area. Additionally, containers have been placed at convenient locations so that employees can deposit their discards in a container rather than littering it. The following collection methods are commonly used.

Table 5.1: Collection method

Type of waste	Collection method
Fabric wastes (cotton, polyester, etc.)	By using colored dustbins
Paper	By collection containers
Cardboard	By collection bags
Plastics	By collection containers
Scrap metal	By collection containers, polythene bags
Food waste	By using colored dustbins, municipal Buckets

Waste reduction

Prevention of waste generation is done by implementing source reduction strategies in all production activities. This is a prevention principle called "avoidance of waste". Waste prevention is closely linked to improving manufacturing methods, change of manufacturing designs such as reducing packaging and influencing consumers and raw material suppliers so that they demand greater products and less packaging. This can only be achieved by effective waste prevention at source which includes adoption of suitable practices, adjustments in the usage of raw materials, and technology and production processes. At the commercial level, source reduction can be done by purchasing raw materials with less packaging, proper system for the inspection of raw materials received proper supervision to reduce fabric waste. By running awareness-programmes to educate the employees and encourage them to use resources effectively with the aim of reducing wastage. Also educate Raw material suppliers that send their raw materials with less packaging and reducing the use of polythene bags as the way of their packaging material.

Further, reduction can be achieved through the reuse of products. Therefore, some garments are: reselling every bit and pieces of waste raw materials starting from cut-pieces of clothes, damaged buttons, zippers, thread cones, broken cloth hangers, empty bobbins to rejected pants, shirts are sold to local buyers. Rejected apparels are resold to local buyers. It creates an opportunity for garments to earn additional income by reselling damaged and rejected items and reducing costs associated with waste disposal.

Waste re-use

It is sometimes possible to use a product more than once in its same form for the same purpose. This is known as re-use. Re-using products displaces the need to buy other products thus preventing the generation of waste. According to the results, the waste re-use practices used by some garment factories under study are listed below.

- Selling disposable cardboards, papers, damaged or scraps fabrics to local buyers

- Empty carton boxes (large cardboard boxes) which come as packing materials of some raw materials are re-sent to the relevant suppliers. Then they have a chance to use that cardboard boxes more than once
- Re-using disposable shopping bags or using boxes as storage containers
- Disposable cardboard boxes are used to make boxes to export their apparel products and deliver products to the local market
- Empty thread cones are sent to local buyers using single-sided paper for notes
- Unused buttons, zippers, elastics fasteners are mostly purchased by local accessory sellers
- Send reusable items to suppliers to reproduce new ones
- Fabric roller which enwrap the raw clothes are sent to same suppliers for the same purpose
- Waste reuse offers advantages to save the use of natural resources to form new products

Not all waste products can be displaced and even reusable products will eventually need to be replaced. It is inevitable that waste will be created as a by-product. According to the results, some small-scale garment factories try to make by-products using leftover fabrics. They try to produce:

- Rug pallets, pillow cases, soft toys, cushions as by-products. Some garment factories sell their pieces of waste raw materials to the self-employers who are producing bandages with using leftover white cotton fabrics. Others send their fabric waste to China and India to produce by-products
- Cotton fabric waste is used to produce yarns
- Nylon fabric waste is used to produce plastic pallets

Waste recycling

Recycling is another waste management strategy in developed countries (Choe & Fraser, 1999). Sri Lanka as a developing country found difficult to implement waste recycling process on the own sites, because it needs advanced technology, technical expertise, recycling plants and infrastructural facilities. Therefore, most garment factories do not have more attention to recycle their solid waste on their own site due to above limitations.

It can be identified that some garment factories are sending their main solid waste such as fabric waste, cardboard wastes, plastic wastes and scrap wastes to Holcim Lanka Pvt Ltd for incineration. Some garment factories sub-contract their production waste to Holcim Lanka and Siam City Cement (Lanka) Ltd for incineration. According to the collected information from managers of garment factories identified that Holcim Lanka and Siam City Lanka use textile waste to produce cement powder. In the process of manufacturing cement powder they need to burn concrete sand and rocks at high temperatures. Here they use textile waste as a burning material to burn ingredients. Further they said that Holcim Lanka and Siam City Cement (Lanka) are the companies have obtained environmental certificate which issued by Sri Lankan government for incineration/thermal destruction of textile waste.

Most garment factories are committed to improving their existing waste management practices since they have positive effect on the operational performance. The study also found that the method of waste management used by the factories depend on the size of the textile company, its quantity of waste generated and its level of operation.

Proper segregation practices and waste reduction practices play a significant role in the whole process of waste management. The waste management practices of the factories have an insignificant effect on their operational performance hence they should embrace such practices to improve public image of the apparel industry and to safeguard the environment.

5.2 Managerial implications

It is much significant for all garment factories to adopt solid waste management practices: waste collection, waste reduction, recycling and reuse in order to have a positive effect on their operational performance. The government and garment factories need to develop policies and principles of solid waste management which should be communicated to all stakeholders for their effective implementation.

In addition, the government needs to develop infrastructural facilities to promote waste for energy technology, reuse and recycling of waste as well as to develop waste composting systems.

The findings of this study can guide managers of garment factories towards the best waste management practices and the role these practices in enhancing operational performance of the factories, because most of the managers are not aware of how the solid waste can be used to get an additional income to the garment industry. In addition, the low cost of disposal and the lack of awareness on negative environmental impact of the disposal methods of the waste have also led to the identified ignorance of the managers towards the use of waste. In this sense the present study could provide valuable guidelines to know how to manage solid waste in the garment industry sustainably.

5.3 Limitations and future research

One of the limitations of the present study is related to its sample used for the data gathering, which was confined to only 40 garment factories in Colombo and Kalutara districts. Therefore, the findings may not be representative to the whole garment industry in Sri Lanka.

Further, most garment factories are practicing proper waste segregation management and waste reduce practices. But very few garment factories are practicing waste recycling practices. It seems to be a huge problem for the garments to recycle fabric waste, because the polyester fabric waste is mixed with the other textile waste of the factories. The polyester cloth which is not easily degradable has made the textile companies unable to send their fabric waste to China for recycling. Though some garment factories try to find solutions to solve this problem it is still in the experimental level. So, this issue is an interesting point for the future research.

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Impact of social learning on entrepreneurial behavior: A case of entrepreneurship education in state universities in Sri Lanka

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Abstract

The purpose of this study is to explore the impact of social learning on entrepreneurship education at state universities in Sri Lanka on development of entrepreneurial behaviors of the course participants. Primary data of the study were collected from 185 students of the extension programmes on entrepreneurship offered by three state universities in Sri Lanka. According to the results of the factor analysis, the social learning process consisted of four factors namely; the attention, retention, motoric reproduction and motivation. The results show that the social learning exists in entrepreneurship education and it impacts positively on the development of entrepreneurial behaviors: the planning activities, establishing legitimacy and market behavior. In particular, motoric reproduction was found to be a significant predictor of all three entrepreneurial behaviors. The present study provides important insights to the higher education sector in framing the delivery of entrepreneurship courses and in selecting of course participants to ensure the effectiveness of entrepreneurship education. Further, entrepreneurs shall engage in social learning in entrepreneurship education to develop their entrepreneurial learning. Nevertheless, the study affirms the existing arguments on the association between social learning and entrepreneurship development through a quantitative analysis.

Keywords*:* Entrepreneurial behaviors; Entrepreneurial education in Sri Lanka; Social learning; State sector universities in Sri Lanka

1. Introduction

Universities are conducting extension programmes focusing on formal entrepreneurship education for potential and existing entrepreneurs with the intention of developing entrepreneurial competencies. These programmes are ranging from certificate level to master level. Generally, the courses offered in the higher education sector of a country like Sri Lanka contemplate on an archaic and traditional methodology of teaching and learning (Naleemi, 2013). According to Ronstadt (1987), entrepreneurship education is a combination of two methodologies, structured component of entrepreneurship education focuses on transferring the prevailing information through traditional lectures and case studies. However, the unstructured component entrepreneurship education focuses on the entrepreneurial know-how which educates learners on how to behave entrepreneurially through the network of individuals who

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engage in the education programme (Ronstadt, 1987). Facilitation of a mutual platform for the course participants to engage with each other and share their real-life entrepreneurial experiences in these programmes is questionable. On the other hand, adult education requires a student-centered learning approach (Taylor, 2017) hence it demands course participants to take their own responsibility in enhancing their learning and thereby their behaviors. In fact, the course participants should have a willingness to learn from others through observing them as well as by interacting with them. Ostensibly, the development of entrepreneurship through entrepreneurship education highly depends on the availability of social learning environment in the classroom. Therefore, this study primarily aims to investigate the impact of social learning on the development of entrepreneurial behaviors in the context of entrepreneurship education programs offered by state sector universities of Sri Lanka.

This paper is organized as follows. The section two reviews literature along with the theoretical foundation where the conceptual model and hypotheses are formulated for empirical testing. The third section describes the methodological design of the empirical work, which is based on the primary survey data. While the results of the statistical analysis are presented in the fourth section, the final sections discuss the findings and present implications and further research directions.

2. Literature review

2.1 Entrepreneurial behaviors

According to Gartner and Carter (2003), entrepreneurship is an organizational phenomenon which is fundamentally about an organizing process of establishing interconnected structures, systems and procedures. Though there could be several other outcomes of entrepreneurial behaviors, the primary and the fundamental outcome is the formation of an organization. According to Gartner and Carter (2003), the entrepreneurial behaviors demonstrated in the process of firm organizing is a multi-level phenomenon which is obviously difficult to separate in between individual and organizational. However, entrepreneurial behaviors comprise a series of temporal activities which are critical in the formation of organizations (Liao & Welsch, 2008). Based on a longitudinal survey named as Panel Study of Entrepreneurial Dynamics (PSED) which offers reliable and generalizable data on the process of business formation (Gartner & Carter, 2003), Liao and Welsch (2008) have identified 26 entrepreneurial behaviors that are being demonstrated by entrepreneurs in forming their organizations.

These 26 behaviors are yet again categorized into four main dimensions namely; planning activities, establishing legitimacy, resource combination and market behavior in the process of firm organizing (Liao & Welsch, 2008). These four dimensions are compatible with the four properties listed by Gartner and Carter (2003) that an organization could use to demonstrate their existence. Accordingly, planning activities relate to the intention which illustrates the purpose and the goals of the entrepreneurs, while establishing legitimacy relates to the boundary which distinguishes the firm from other organizations. Further, resource combination and market behavior are well attuned with resources and exchange respectively. In addition, Williams-Middleton (2010)[3] has synthesized these 26 entrepreneurial behaviors by leveraging on several scholarly works.

According to Liao and Welsch (2008), planning activities include spending more time on thinking about business ideas, preparing business plans, forming a start-up team, forecasting financial gains, deliberating on capital employment, negotiating personal attributes like family and education with the intention of laying down the right foundation for a successful formation of an organization. Hence, these behaviors determine the conception or the expansion of an organization and formulate the conducive environment required for smooth functioning of the organization. Once, the foundation is laid, then establishing the organizational identity is critical to ensure the right gestation of the business. Thus, inculcating a distinct image for the organization and ensuring its validity within the legal boundaries of its societal and industrial context is critical for the successful formation of the organization (Liao & Welsch, 2008). Hence, establishing legitimacy includes opening up a bank account for the company, installing a separate phone line for the business and paying income and social taxes etc. On the other hand, securing a better relationships with the customers and the suppliers to ensure a significant market share can be considered as the utmost important behavior among all behaviors. Thus, the exchange as specified by Gartner and Carter (2003) or market behavior as specified by Liao and Welsch (2008) is critical for the existence or the gestation of a business. As a result, entrepreneurs engage in behaviors like identifying market opportunities, developing business models, marketing activities and collecting money from debtors and customers.

However, no one has mentioned a specific behavior that all entrepreneurs should contemplate on starting a business. According to Gartner and Carter (2003), an emerging organization could have different birthdays on the basis of how it would be measured. Generally, an organization can be expected to have four birthdays in the process of business formation namely personal commitment, financial support, sales and hiring employees. In addition, these actions may take place at different times in different orders and in different degrees (Liao & Welsch, 2008). For an example, each and every startup would not require a startup team. On the other hand, if the entrepreneur is financially capable and stable, then there would not be any need for external funding. Likewise, these entrepreneurial behaviors may vary across different organizations created and managed by the entrepreneurs.

Nonetheless, an entrepreneur may need to demonstrate all or most of these behaviors at different points in time if he/she is to successfully form the organization (Liao & Welsch, 2008). The decision or the influence to

[3] Williams-Middleton (2010) has referred scholarly works of Baron (2002), Bygrave and Churchill (1989), Hackett and Dilts (2004), Harmon et al. (1997) and Reynolds et al. (2004).

demonstrate a particular behavior not only stems from the individual itself, but also from the environment in which they interact (Williams-Middleton, 2010). As Bandura (1974) has identified, the behavioral development relies upon the individual as well as the environment. The environment for the entrepreneurship development mainly constitutes of five factors namely; government policies and procedures, socioeconomic conditions, entrepreneurial and business skills, financial support to businesses and non-financial support to businesses (Gnyawali & Fogel, 1994). According to Gamage (2003) lack of fund availability, usage of outdated technology, absence of adequate provisions and institutional support and lack of managerial competencies are the root causes for lack of entrepreneurship development in Sri Lanka.

Thus, it seems that the knowledge on business management i.e. entrepreneurial and business skills as suggested by Gnyawali and Fogel (1994) and overcoming the lack of managerial competencies in the local context as identified by Gamage (2003) is a fundamental attribute in Sri Lanka for successful development of entrepreneurship in the country. According to Kuratko (2005), entrepreneurship in a country can be developed through entrepreneurship education. Hence, entrepreneurship education can be considered as a major initiative to establish a conducive environment for entrepreneurship in Sri Lanka by nurturing entrepreneurial and business skills and also by addressing the lack of managerial competencies in the local context.

2.2 Social learning and social learning theory

According to Bandura (1971), social learning can be defined as the process through which people develop their behaviors by observing or imitating others. Traditional learning theories believed that human behavior is determined intrinsically based on the consequences of the direct experiences by the individuals and this stance was challenged by Albert Bandura as behaviors can be learned through the observation of others' behaviors and the respective consequences as well (Bandura, 1971). It enables people to involve in behavioral endorsements or inhibitions by witnessing the consequences of such behaviors displayed by other social actors instead of directly experiencing them. As identified by Bandura (1971), social learning leads to insightful and foresighted behaviors as it allows people to establish symbolic representations to external influences which can be used later in guiding their actions during a direct experience.

In social learning perspective, learning seems to be the most influential approach. People tend to acquire the behavior of their social agents namely; family, friends, business partners, competitors and learning partners etc. through informal observation especially when those are the only reliable cues available in the context to model the behavior (Bandura, 1969). According to Bandura (1969), identification learning can be defined as demonstrating a similar behavior as of a model's behavior in which the model's behavior has served as the determinant of the individual's behavior. Identification includes either the adoption of a common attribute from a diverse set of behaviors for a particular situation by the social agents or symbolic representation of the particular model. Thus, it frequently differs from mere imitation of behavior which is about the reproduction of the particular behavior (Bandura, 1969). However, the stimulus source of the behavior should also be taken into account in concluding whether a particular behavior is resulted from identification as there are several identical behaviors which are not determined through identification but through the environmental cues (Bandura, 1969).

The basic learning process that underlines identification is known as observational learning (Bandura, 1969). As outlined by Bandura (1969), observational learning involves imaginal and/or verbal memory representation of modelled behavior which later operates as the facilitator for reproduction of the behavior. However, modelling behavior is a complex process complied of several sub processes namely; attentional, retention, motoric reproduction and motivational (Bandura, 1969; Yi & Davis, 2003). Recognizing the distinctive elements of the model's behavior is known as the attentional process (Bandura, 1969; Yi & Davis, 2003). Bandura (1969) further states that the attentional process is the starting point of observational learning and the absence of it may avoid the reproduction of the behavior. However, incentive orientation of the behaviors and repetitive observation of complex behaviors may be required to ensure the occurrence of attentional process (Bandura, 1969).

Retention process is about long-term retention of the symbolic memory representation of the modelled behavior and it can be effectively facilitated through practice or the explicit performance of the modelled behavior (Bandura, 1969; Yi & Davis, 2003). Motoric reproduction process utilizes these symbolic memory representations to enact the behaviors when the need arises (Bandura, 1969; Yi & Davis, 2003). Bandura (1969) further stated that the level of reproduction depends on the level of attention paid to the modeled behavior, physical conditions of the individual and also the covert internal responses of the model which cannot be observed. As Bandura (1969) has stated, motoric reproduction would not occur at the presence of negative reinforcement or the absence of positive reinforcement. Hence, motivational process is required to ensure that observational learning will be converted into overt performance (Bandura, 1969; Yi & Davis, 2003).

The entrepreneurial behavior is an individual action aligned with the environment and the characteristics of the entrepreneur (Williams-Middleton, 2010). Accordingly, entrepreneurs tend to realize the way that they should behave by interacting with their environment as the social norms significantly influence the human behaviors, specifically in uncertain environments in which the entrepreneurs mostly operate. Further, the element of environment does not only include the structural components but also the human beings and the social networks among them (Williams-Middleton, 2010). According to Bandura (1974), people being social creatures tend to interact or observe others in their environment in determining their short-term and long-term actions. Moreover, he claims that people tend to endorse and inhibit behaviors based on the different reinforcements received by their social agents for demonstrating a particular behavior in shaping their own behaviors.

A significant number of individuals who have started their own businesses have had entrepreneurial or self-employed parents and those role models have had a stimulation on becoming an entrepreneur (Scherer, Adams & Wiebe, 1989). Carsrud and Johnson (as cited in Williams-Middleton, 2010) have identified that the role-sets demonstrated by the entrepreneurs' neighborhood i.e. family, friends, business partners, competitors, and learning partners etc. navigate the entrepreneurial behaviors. Further, a significant majority of non-entrepreneurs have not had entrepreneurial or self-employed parents (Scherer et al., 1989). It affirms that entrepreneurs learn through the observation of others in shaping their behaviors. Entrepreneurship education which uses entrepreneurial role models i.e. parents, co-entrepreneurs, successful local and international entrepreneurs etc. is effective in developing entrepreneurial behaviors that are essential for the formation of the organizations (Scherer et al., 1989). Further, they have mentioned that the observation of different personalities is more effective in nurturing innovativeness rather than observing conformists. Moreover, methodologies like role models, mentoring each other, simulations, discussion groups, debates etc. are more effective in nurturing entrepreneurial behaviors and skills through entrepreneurship education (Gibb, 2002). Hence, the development of entrepreneurial behavior is largely dependent upon social learning phenomena.

According to Bandura (1974), not only the environmental cues (behavioral stimulus by social agents) but also the individuals' characteristics, traits and personalities play a key role in shaping their behaviors. According to Williams-Middleton (2010), individual factors include cognition, commitment, motives, values, skills and roles. Notably, knowledge is a socially constructed phenomenon in which learning facilitates a shift of knowledge from one individual to another due to interdependent learning environment (Ronstadt, 1987). Further, knowledge is also a personally constructed phenomenon and thus the participants in entrepreneurship education who possess personalities of demonstrating more eagerness to learn from others may socially interact during the programme in developing their entrepreneurial behaviors (Williams-Middleton, 2010). Therefore, self-directed learning readiness of learners seem to moderate the relationship between social learning and development of entrepreneurial behaviors as highlighted by Valerio, Parton, and Robb (2014).

2.3 Entrepreneurship education as ground for social learning

According to Drucker (1985), entrepreneurship can be nurtured through proper entrepreneurial education. He further argues that different personalities have been successful as entrepreneurs and thus the entrepreneurship is not just an innate attribute. Later, Kuratko (2005) who collectively affirmed the argument of "entrepreneurs are born" by Morris, Kuratko, and Schindehutte (2001) and changed his direction by accepting that entrepreneurship can be developed through entrepreneurial education.

According to Valerio et al. (2014), entrepreneurship education can be defined as a formal and an academic education which transmits specific mindsets and skills to encourage the participation and upgrade the performance of a range of entrepreneurial activities. Initially, entrepreneurship education contemplated on a business administration scope which is relatively a broader area of study compared to narrower fragmentation of business education that was prevailing in the system (Zeithaml & Rice 1987, as cited in Kuratko, 2005). In their review of entrepreneurship pedagogy, Solomon, Duffy, and Tarabishy (2002) state that entrepreneurship education must envisage on building entrepreneurial skills, characteristics, behaviors and also the ways and means of overcoming the challenges in new venture creation (as cited in Kuratko, 2005). Hence, entrepreneurship education programmes have been used with business plans, business startups by students, behavioral simulations, field trips, video and movie-based learning and consultation with practicing entrepreneurs to achieve the intended outcomes of the programmes (Kuratko, 2005). Further, Sexton and Upton claim that these programmes should encourage individual activities rather than group activities which mandate the students to find innovative solutions in uncertain conditions, while bearing the risk (as cited in Kuratko, 2005).

Valerio et al. (2014) have identified three factors namely; context, participants and programme characteristics which determine the outcomes of entrepreneurship education. They argue that if a market in which the entrepreneurship education occurs, possesses unique economic, political and cultural contexts that support fostering of entrepreneurship, is more likely to enable entrepreneurial activity rather than a market which lacks such contextual support. In addition, personality traits of the course participants are critical in moderating the outcomes of an entrepreneurship education programme. Thus, the demographic profile, personality, education, experience, behavior and most importantly the interests and intentions of the course participants are critical for a positive outcome from entrepreneurship education. On the other hand, an appropriate portfolio of programme characteristics which consist of usual classroom activities and wrap around activities like mentoring, networking opportunities, guest speakers, and collaboration with other institutions are required to enhance the delivery of entrepreneurship education for a successful outcome (Valerio et al., 2014). Thus, the individual (personal characteristics of the learner) and the environment (opportunity to learn from and among others) are critical for effective entrepreneurship education. The study done by Zozimo, Jack, and Hamilton (2017) to examine the entrepreneurial learning through the observation of role models have found that entrepreneurs do not learn merely from being exposed to role models, but more significantly, they learn from observing role models in distinct social contexts such as the home or the school. Similar study was done by Preedy and Jones (2017) in UK higher education institutional context to examine how students can learn entrepreneurially in the university environment. This study has highlighted the role of student groups in bringing together like-minded students with common goals, to support and nurture one another, encourage social processes of group working that may also act as an important basis for individual learning, as individuals 'socially share' knowledge before reflecting and processing it themselves.

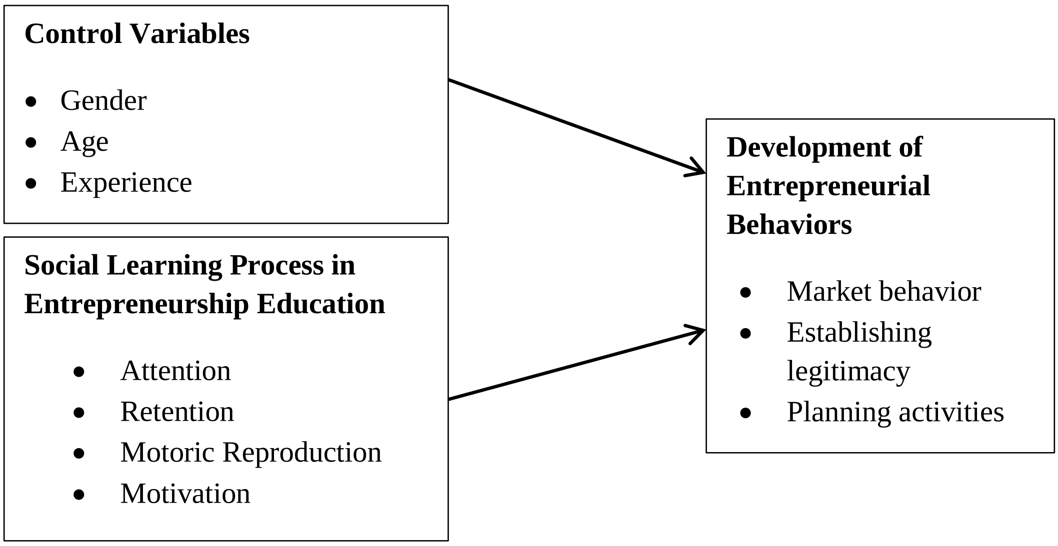

Figure1: Conceptualization

2.4 Hypotheses

Taking the review of literature into account, following hypotheses remained to be explored:

H1 - Social learning process (i.e. attention, retention, motoric reproduction and motivation) in entrepreneurship education has a positive impact on the development of market behavior aspect of entrepreneurial behaviors.

H2 - Social learning process (i.e. attention, retention, motoric reproduction and motivation) in entrepreneurship education has a positive impact on the development of establishing legitimacy in entrepreneurial behaviors.

H3 - Social learning process (i.e. attention, retention, motoric reproduction and motivation) in entrepreneurship education has a positive impact on the development of planning activities in entrepreneurial behaviors.

3. Methods

3.1 Sampling and data collection

The population of the study represented the participants of extension programmes on entrepreneurship education offered by three state universities in Sri Lanka. As of December 2018, during which the data collection was commenced, 354 students were enrolled in such extension programmes on entrepreneurship education offered by the three state universities. According to the formula for determining the sample size in research activities by Krejcie and Morgan (1970), the sample size of this study is 185 for the population of 354 at 95% confidence with a 5% margin of error. As the course participants were from three different universities, to ensure the representation of population in the sample, stratified random sampling was used based on the university. According to Sekaran and Bougie (2009), if there are identifiable subgroups within the population that are expected to have different parameters on the variables of interest, then the researcher could adopt stratified random sampling which divides the population into mutually exclusive groups first and then select the respondents randomly according to the allocation.

3.2 Operationalization of variables

Following the review of literature, suitable measures for the purpose of this study were identified where theoretical and empirical support for each construct was evident.

Entrepreneurial behaviour

Entrepreneurial behavior is multidimensional in nature and it was operationalized as actual or intentional behaviours including establishing legitimacy, market behavior and planning activities. The measures were originally developed by Liao and Welsch (2008) and were modified by the researcher to measure the progress of actual or intentional entrepreneurial behaviors since the courses are offered for both practicing and potential entrepreneurs. All items were measured on a five-point Likert scale with the levels 1 = “strongly disagree” to 5 = “strongly agree”.

Social learning

The measures on this were originally developed by Yi and Davis (2003) and were modified by the researcher to suite the context of entrepreneurship education. Though Yi and Davis (2003) used 11-point Likert scale in their study, the five-point Likert scale was selected by the researcher to maintain the consistency throughout the survey instrument.

Control variables

Past studies showed that demographic variables such as gender, age and entrepreneurial experience might be correlated to social learning and entrepreneurial behaviour. Thus, these variables comprised control variables in the present study.

Once the data were cleaned and prepared for further processing, different kinds of statistical analyses were carried out using SPSS, version 20. The hierarchical regression was executed to test the relative influence of each dimension of social learning process on entrepreneurial behavior.

4. Results

4.1 Validity reliability of scales

The validity of the measurement scales was assessed by means of exploratory factor analysis (EFA) using the principal component analysis with Varimax rotation. As the study involves interrelated dimensions, it is pertinent to determine how each set of measures are associated with each other. Therefore, Cronbach’s alpha was used to measure the internal consistency (reliability). Cronbach’s alpha helped to measure “unidimensionality” or the extent to which the scale measures one underlying factor or construct.

There were four constructs namely; attention, retention, motoric reproduction and motivation used to measure social learning in entrepreneurship education. They were measured by 16 items (four items per construct) adapted from Yi and Davis (2003). The factor analysis for those 16 items was carried out using the method of principal component analysis based on eigen values greater than one. It created a four component solution which is aligned with the basic scale identified by Yi and Davis (2003). Since it recorded a cumulative variance explained of 75.45% for the four components with eigen value greater than one. The same solution was considered to identify the presence of cross factor loadings. According to Field (2009), if the cumulative variance explained is greater than 40%, then it is considered as a good solution.

Table 1: Factor analysis result for social learning

Construct	Items	Factor loading	Cumu.Variance explained by construct	Cronbach's α
Motivational	Course showed the value of using entrepreneurial behaviors narrated by others	0.837	21.254	0.90
	Course increased the intention to master entrepreneurial behaviors narrated by others	0.812		
	Course assisted in perceiving the usefulness of entrepreneurial behaviors narrated by others	0.806		
	Course motivated the use of entrepreneurial behaviors narrated by others	0.749		

Table 1: Factor analysis result for social learning (continued)

Construct	**Items**	**Factor loading**	**Cumu.Variance explained by construct**	**Cronbach's α**
Motoric reproduction	Course provided the opportunity for reproduction of narrated entrepreneurial behaviors	0.842	39.861	0.88
	Had enough practice of the entrepreneurial behaviors narrated by others	0.816		
	Accurately reproduce the entrepreneurial behaviors narrated by others	0.780		
	Course helped to practice the narrated entrepreneurial behaviors	0.647		
Retention	Symbolically processed others' narrations on their entrepreneurial behaviors	0.826	57.938	0.88
	Summarized the key aspects of others' narrations on their entrepreneurial behaviors	0.804		
	Mentally visualized the entrepreneurial behaviors narrated by others	0.710		
	Mentally practiced the entrepreneurial behaviors narrated by others	0.605		

Table 1: Factor analysis result for social learning (continued)

Construct	**Items**	**Factor loading**	**Cumu.Variance explained by construct**	**Cronbach's α**
Attention	Paid close attention to others' narrations on their entrepreneurial behaviors	0.811	75.452	0.86
	Others' narrations on their entrepreneurial behaviors held my attention	0.801		
	Concentrated on others' narrations on their entrepreneurial behaviors	0.756		
	Absorbed by others' narrations on their entrepreneurial behaviors	0.680		

Three constructs used to measure development of entrepreneurial behavior namely; planning activities, establishing legitimacy and market behavior. Eighteen items (seven for planning activities, seven for establishing legitimacy and four for market behavior) adapted from Liao and Welsch (2008). The factor analysis for those 18 items was carried out using the method of principal component analysis based on eigen values greater than one. It created a three component solution.

Table 2: Reliability and validity through Factor analysis for development of entrepreneurial behaviour

Construct	Items	Factor loading	Cumu.Variance explained by construct	Cronbach's α
Establishing legitimacy	Paying social security taxes	0.905	23.510	0.884
	Paying indirect taxes	0.864		
	Dealing with income tax	0.800		
	Listing business in commercial documents	0.722		
	Installing separate phone lines for business	0.612		
	Opening bank accounts for business	0.569		
Market behavior	Identifying potential markets	0.872	42.931	0.894
	Developing processes	0.814		
	Progress marketing	0.813		
	Progress in sales and cash collection	0.770		
Planning activities	Preparation of business plans	0.772	61.849	0.776
	Time spent on thinking about business ideas	0.700		
	Saving money to invest in businesses	0.662		
	Projecting financial statements	0.643		
	Forming teams for start-ups	0.633		
	Enabling more time for business	0.559		

Table 3 presents mean, SD and inter-correlations of the variables in the study. Market behavior is positively correlated with attention (r=0.477, $p < 0.01$) retention (r = 0.466, $p < 0.01$), motoric reproduction (r = 0.412, $p < 0.01$) and motivation (r = 0.395, $p < 0.01$). Establishing legitimacy is positively correlated to all four social learning variables including attention (r = 0.286, p < 0.01), retention(r = 0.204, p < 0.01), motoric reproduction (r =0.367, p < 0.01) and motivation (r = 0.238, p < 0.01)., in addition to the independent constructs, establishing legitimacy has positive significant correlation with all control variables comprising gender(r = 0.197, p < 0.01), age(r = 0.190, p < 0.05) and experience (r = 0.242, p < 0.01). The third dependent variable, planning activities has positive correlation with all independent variables including attention (r = 0.290, p < 0.01), retention (r = 0.283, p < 0.01), motoric reproduction (r = 0.298, p < 0.01) and motivation (r = 0.299, p < 0.01). The closer analysis of the possible multicollinearity showed that the variance inflation factor (VIF) values of all the independent variables were below 1.6, which is between 1 and 10. Therefore, multicollinearity issue neither was nor aroused.

Table 3: Constructs correlation, means and standard deviation

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1.Gender	0.690	0.465									
2.Age	31.660	8.571	.272**								
3.Experience	4.375	6.408	.251**	.586**							
4.Attention	4.116	0.698	0.074	0.099	-0.015						
5.Retention	3.892	0.725	0.049	-0.014	-0.103	.616**					
6.Motoric Reproduction	3.637	0.766	-0.012	0.093	0.049	.430**	.613**				
7.Motivation	4.184	0.642	0.032	0.064	0.04	.526**	.576**	.570**			
8.Market behavior	4.215	0.759	0.09	0.093	0.053	.477**	.466**	.412**	.395**		
9.Establishing legitimacy	3.641	0.844	.197**	.190*	.242**	.286**	.204**	.367**	.238**	.526**	
10.Planning activities	4.100	0.576	0.075	0.029	0.135	.290**	.283**	.298**	.299**	.468**	.437**

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

4.2 Hypothesis testing

Table 4 presents the results of the hierarchical regression analysis for three dependent variables. In model 1, social learning variables were separately regressed on the entrepreneurial behaviors (market behavior, establishing legitimacy and planning activities). In model 2, social learning constructs with control variables were regressed on three entrepreneurial behaviors. As shown in model 1, only one variable namely motoric reproduction has significant positive influence on market behavior. All four social learning variables are having significant positive influence on establishing legitimacy. Two variables associated with social learning process namely, motivation and motoric reproduction are positively influencing on planning activities.
The results in model 2 shows that motoric reproduction has a significant positive influence (β =0.266, p < 0.01) on market behavior aspect of entrepreneurial behavior (R^2=0.17; F=4.87; p < 0.01) and that relationship is significantly moderated by gender of the entrepreneurs. However, impact of attention and motivation on market behavior are positive and not significant. Retention has negative insignificant impact on market behavour. Therefore, H1 is partially accepted.

H2 postulate that a positive relationship exists between social learning and establishing legitimacy aspect of entrepreneurial behavior, and the results fully supported for this prediction. All four variables in social learning including motivation (β = 0.191, p < 0.05), motoric reproduction (β = 0.161, p <0.05) retention (β = 0.257, p < 0.01) and attention (β = 0.314, p < 0.05) positively and significantly influence on our second dependent variable, establishing legitimacy (R^2=0.24; F=7.62; p < 0.01). Among them, retention and attention explain legitimacy on 1 percent significant level.

H3 suggests that social learning influence on planning activities aspect of entrepreneurial behavior and results confirmed only two social learning variables namely, motivation (β = 0.162,p <0.05) and motoric reproduction (β=0.156,p <0.05) explain the variance of planning activities on the 5 percent significance level(R^2=0.09;F=2.61;p < 0.05). Retention and attention were not significant (p > 0.05).

Table 4: Result of multiple regression analysis: social learning and development of entrepreneur behaviors

Variables	Market Behavior β	Establishing legitimacy Β	Planning activities β
Model 1			
Motivation	0.019	0.189*	0.166*
Motoric reproduction	0.266**	0.159*	0.153*
Retention	-0.071	0.263**	0.071
Attention	0.140	0.314**	0.134
Model 2			
Motivation	0.004	0.191*	0.162*
Motoric reproduction	0.266**	0.161*	0.156*
Retention	-0.048	0.257**	0.082
Attention	0.116	0.314**	0.139
Gender	0.155*	0.007	0.042
Age	0.011	0.021	-0.137
Experience	0.168	-0.048	0.162
Overall R^2	0.167	0.239	0.097
Overall adjusted R^2	0.133	0.207	0.060
ΔR^2	0.068	0.002	0.021
F	4.868**	7.615**	2.615*

5. Discussion

The present study was designed to determine the contribution of social learning on entrepreneurial behavior of existing entrepreneurs and/or potential entrepreneurs who are following entrepreneurship courses at three state universities in Sri Lanka. The social learning theory provided the theoretical foundation for this study. In addition to the formal education and training methodologies, it is important to understand what extent entrepreneurs are mutually and informally learn from other colleagues. This research shows that all three entrepreneurial behaviors considered are influenced by motoric reproduction. As Wood and Bandura (1989) emphasized learners' symbolic conceptions are translated into appropriate courses of actions and those are achieved through conception-matching process, in which people's centrally guided patterns of behavior are en-acted and the adequacy of their actions is compared against their conceptual models. In addition, the study found that establishing legitimacy is influenced by all social learning constructs; attention, retention, motoric reproduction and motivation.

According to Ahlstrom and Bruton (2001), lacking legitimacy, ability of an organization to pursue its goals and accumulate resources can be substantially reduced. Therefore, entrepreneurs who are following entrepreneurship programmes are interested to understand and follow best practices to more legitimize their firms. With respect to planning activities, those are enhanced by two social learning components namely, motivation and motoric reproduction.

6. Conclusions

The findings of the present study contribute to the existing literature by helping to clarify the role of social learning in fostering entrepreneurial behavior in the context of entrepreneurship education at higher education institutions hence, it is a starting point to fill the knowledge gap in these areas. The results of the study confirm that within social learning process, motoric reproduction phase is more important than the other phases. Accordingly, we can conclude that the things they learn from others they would like to practice immediately in their ventures. Collaborative learning method through the use of peer entrepreneurial students and expert practicing entrepreneurs / teachers as role models is important.

6.1 Theoretical implications

This study affirms the propositions of Valerio et al. (2014) and Ronstadt (1987) in which they have highlighted the requirement for a combination of traditional and unconventional pedagogy in entrepreneurship education which to be effective. The regression analysis suggests a significant positive impact of social learning on the development of entrepreneurial behaviors. Thus, it implies that effective entrepreneurship education contemplates on a combination of traditional and unconventional pedagogy.

6.2 Implications for higher education institutions and policy makers

The universities and other higher education institutions which offer entrepreneurship education programmes may develop their syllabuses and design their course delivery in a way that they would include both traditional lectures and wrap around activities like mentoring, networking opportunities, guest speakers, and collaboration with other institutions as suggested by Valerio et al. (2014). Hence, the selected three state universities can further strengthen their existing pedagogies in entrepreneurship education, while the new entrants could contemplate on these implications in structuring their courses. Specifically, the educational institutions and policy makers could ponder upon giving opportunities to the course participants to rehearse and reproduce their learning in developing their entrepreneurial behaviors relating to planning activities, establishing legitimacy and market behavior.

6.3 Implications for entrepreneurs

Both potential and practicing entrepreneurs can engage in social learning in nurturing their entrepreneurial behaviors. Specifically, they can nurture their entrepreneurial behaviors pertinent to planning activities by rehearsing and reproducing such activities more and more. Further, they can develop their entrepreneurial behaviors relating to establishing legitimacy and market behavior by paying more attention to the stories narrated by their classmates on such behaviors and also reproducing the modeled behaviors.

6.4 Limitations and further research

The study utilized a combatively smaller sample size stratified according to the universities. However, no attempts were made to stratify the sample according to the types of the extension programmes on entrepreneurship and this can be viewed as a limitation of the present study, which requires further research in future. This research contemplated on observational learning process in assessing social learning as suggested by Bandura (1969) and Yi and Davis (2003). Further, the identification of entrepreneurial behaviors was limited to the works of Gartner and Carter (2003) and Liao and Welsch (2008). Hence, further research can be conducted by replacing this theoretical scope with different frameworks and theories discussed by such authoritative scholars in the field of social learning and entrepreneurial behaviors.

Moreover, to overcome the inherent limitations of a quantitative research design, the future research on this research issue can be conducted either with a qualitative or mixed research design to elaborate the phenomenon in detail. Since, this study discloses that entrepreneurship education is effective in determining the development of entrepreneurship, further research can be conducted to assess the impact of non-educational elements on the development of entrepreneurship and thereby to refine the reasons for lack of development of entrepreneurship in the country.

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Mitigating liabilities of foreignness through local celebrity endorsements: A study on foreign processed food brands in Sri Lanka

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Abstract

Firms entering and operating in foreign countries face many liabilities of foreignness, and consumer ethnocentrism is one such liability which is characterised by the preference for domestic products. Thus, it creates a concern whether the "foreignness" of a product makes it less preferable to consumers in the domestic countries. Taking this concern into consideration, the difference that local celebrity endorsement creates in purchase intentions and perceived brand localness for foreign processed food brands among ethnocentric and non-ethnocentric customers was investigated along with the increase in purchase intentions created among ethnocentric customers. Data was collected from Sri Lankan customers through an online questionnaire using a convenience sampling technique. The findings of the research indicate that compared to a situation with no celebrity endorsement, purchase intentions and perceived brand localness for processed food products of foreign brands for ethnocentric customers is higher than for non-ethnocentric customers when local celebrity endorsements are used. Further, it was found that purchase intentions for processed food products of foreign brands among ethnocentric customers increase with local celebrity endorsement. Therefore, based on the observed results, it is concluded that local celebrity endorsements can be used as a method for foreign firms to reduce the liabilities of foreignness faced by them in a host country.

Keywords: Consumer ethnocentrism; Foreign processed food brands in Sri Lanaka; Liabilities of foreignness; Local celebrity endorsements; Perceived brand localness, Purchase intentions

1. Introduction

International trade enables consumers from different countries to consume and experience products and services of other countries. Thus, businesses go beyond their home country and expand business activities in other countries through foreign direct investment (FDI). As a result, there is a massive increase in FDI and a rampant optimism towards the profits that are available for firms to grab by investing abroad (Daamen, Hennart, Kim, & Park, 2007).

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Many foreign firms have successfully entered and operated in foreign countries but in the mean time they have also faced challenges of operating abroad. Hymer (1960) and Kindleberger's (1969) work theorizes that these foreign firms doing business abroad face many costs which are today referred to as liabilities of foreignness (LOF) that cause foreign firms to incur costs domestic firms do not, incur costs to a greater extent than domestic firms do, or be denied benefits only domestic firms are eligible to receive (Mezias, 2002).

Many scholars (e.g., Matsuo, 2000; Mezias, 2002; Nachum, 2003; Zaheer, 1995) have studied the sources of LOF and have identified discrimination as a source of LOF. Discrimination has been categorized into political hazards and consumer ethnocentrism (CET) (Eden & Miller, 2001, 2004). The present research focuses on consumer ethnocentrism as a source of LOF. Although non-ethnocentric customers evaluate foreign products using product attributes (Bamber, Phadke, & Jyothishi, 2012) ethnocentric customers show a strong preference towards domestic products (Balabanis & Diamantopoulos, 2004) and they tend to avoid purchasing foreign products because of nationalistic reasons (Shimp & Sharma, 1987) which subsequently creates a liability to foreign firms that in response use different strategies to overcome LOF and one such strategy is the use of local celebrity endorsements. Erdogan (1999) identified celebrity endorsements (CE) as a powerful device by which firms can enter foreign markets. Using a local celebrity gives an advantage to foreign firms (Muchiri, 2016). Jerzyk and Wyczynski (2015) found that consumers with high levels of ethnocentrism show a stronger preference for local celebrities than foreign celebrities.

Therefore this paper elaborates the ethnocentric tendencies of Sri Lankan consumers that cause LOF for foreign firms that enter and operate in the Sri Lankan processed food product market where many foreign brands operate and where many celebrity endorsements take place and to understand the difference in purchase intentions and perceived brand localness among ethnocentric and non-ethnocentric customers and also to understand the effectiveness of such foreign firms in using local celebrity endorsements to mitigate these LOF by creating purchase intentions and perceived brand localness in the minds of Sri Lankan customers.

The next section reviews literature on liabilities of foreignness as a concept, consumer ethnocentrism as a source of LOF and celebrity endorsement as a suggested method of overcoming LOF. Then the developed hypotheses, methods used to test the hypotheses, the analysis and the results and a discussion of the results are presented. Finally, the paper presents its conclusion and implications for the theory and practice.

2. Literature review

The behaviour of firms moving across borders has been heavily studied with the aim of presenting findings which are beneficial to both businesses and policy makers. Among many of the concepts introduced to explore the behaviour of foreign firms, Liabilities of Foreignness (LOF) stands out.

"Liabilities of Foreignness" refer to a concept known since the work of Hymer (1960) that theorized the liabilities or costs faced by firms investing and doing business abroad. Kindleberger (1969) too made similar observations and subsequently the term LOF was created by Zaheer (1995) to refer to the additional costs that are faced by foreign firms when operating abroad in relation to local firms in the host countries. Zaheer (1995) identified sources of LOF as firm specific costs, costs related to special distance, costs connected to home-countries of foreign firms and costs arising from discrimination in the host country. Scholars such as Matsuo (2000), Eden and Miller (2001), Mezias (2002), Nachum (2003) and Eden and Miller (2004) have used much broader categorizations on the sources of LOF. In most of the discussions, there has been confusion in the literature about the relationship between costs of doing business abroad (CDBA) and LOF (Calhoun, 2002). However, Eden and Miller (2004) attempting to sort out the differences of these two concepts argue that CDBA includes both social and economic costs where LOF stressed the social costs entailed in CDBA. Hence LOF would also arise from host-country's unfamiliarity with the foreign firm and/or from discriminatory treatment by forms of either political hazards or consumer ethnocentrism.

Consumer ethnocentrism (CET) represents the beliefs held by host country consumers about the appropriateness and morality of purchasing foreign-made products (Shimp & Sharma, 1987). Furthermore, CET indicates the tendencies to differentiate between products of the home country (in-group) and foreign countries (out-groups) and avoid purchasing foreign products because of nationalistic reasons. Non-ethnocentric consumers evaluate products based on their own merits such as price, quality and other features without considering where they were made. Ethnocentric consumers tend to think that purchasing products of other countries (out-groups) is unpatriotic and would hurt the domestic economy and cause loss of jobs (Shimp & Sharma, 1987). By developing the CETSCALE to measure consumer ethnocentric propensities, Shimp and Sharma (1987) showed that consumer ethnocentrism explains the consumers' preference towards domestic products over foreign imported products, even when the foreign products are cheaper and are of higher quality (Balabanis, Diamantopoulos, Mueller, & Melewar, 2001).

Various researchers (e.g., Daamen et al., 2007; Petersen & Pedersen, 2002; Sethi & Guisinger, 2002; Zaheer, 1995) have identified different methods to overcome LOF, and even manipulate the strength and persistence of the LOF (Nachum, 2003). Erdogan (1999) identified celebrity endorsements as a powerful device by which firms can enter foreign markets. He further elaborated that the world-wide popularity of celebrities can help foreign companies to break through many host countries' cultural 'road blocks'. Similarly, Jerzyk and Wyczynski (2015) found that consumers with high levels of ethnocentrism show a stronger preference for local celebrities than foreign celebrities in endorsement.

3. Hypothesis development

A number of studies have been done over the years on celebrity endorsement and its effects on consumer purchase intentions within countries such as India and Pakistan (e.g., Jamil & Rameez ul Hassan, 2014; Raval & Tanna, 2014; Pornpitakpan, 2004; Srikanth, Saravanakumar, & Srividhya, 2013), two countries that are in the South Asian region in which Sri Lanka is also a member country. According to the above studies, celebrity endorsement has an influence on consumer purchase intention and it has been proven that celebrity endorsement plays a significant role in enhancing brand image and brand awareness and ultimately affects consumer purchase intention (Nasir, Khan, Sabri, & Nasir, 2016).

Several scholars (e.g., Dissanayake & Ismail, 2015; Koththagoda, & Dissanayake, 2017; Kumara, 2016) have studied on celebrity endorsements in a Sri Lankan context although the relationship between local celebrity endorsements and consumer purchase intentions has not been tested. However, Muchiri (2016) emphasized on the successfulness of foreign brands using local celebrities to cater to the Kenyan market and Nasir et al. (2016) elaborated the successfulness of using local celebrities in India.

Consumer ethnocentrism is negatively related to judgment of foreign products and willingness to buy foreign products (Klein, Ettenson, & Morris, 1998). Ethnocentric consumers tend to believe that purchasing imported products is unpatriotic since it results in job losses for fellow citizens in their country and harms the domestic economy (Shimp & Sharma, 1987). Balabanis and Diamantopoulos (2004) found that ethnocentric consumers prefer domestic products and McLain and Sternquist (1991) found that non-ethnocentric consumers were no more likely to purchase domestic products than ethnocentric consumers. Meanwhile, Jerzyk and Wyczynski (2015) found that ethnocentric consumers show a stronger preference for local celebrities than foreign celebrities in endorsement in marketing communication. In contrast, Bamber et al. (2012) found that non-ethnocentric customers consider the nationality of celebrities as irrelevant but accepts endorsement in marketing communication if it is creative and conveys a clear message.

Hence, it may be anticipated that the reaction towards local celebrity endorsement by ethnocentric and non-ethnocentric customers to be different in terms of purchase intentions but using a local celebrity may be a suitable strategy for foreign firms to create purchase intentions in the minds of the local consumers with ethnocentric tendencies. Based on the above findings, it could be hypothesized that,

> **H1a:** There is a difference between the purchase intentions of ethnocentric and non-ethnocentric customers for processed food products of foreign brands with local celebrity endorsement
> **H1b:** There is an increase in purchase intentions of ethnocentric customers for processed food products of foreign brands with local celebrity endorsement

Although there are many benefits for foreign firms that operate in many countries, being “global” is not the only approach to success (Steenkamp & de Jong, 2010). Research has identified the consumer segments in modern markets that include ethnocentric consumers who prefer products of domestic origin with an intention to protect the domestic economy (Shimp & Sharma, 1987) even if the qualities of domestic products are lower than foreign products (Wall & Heslop, 1986). The extent to which a brand is being recognized as a local player and an icon of the local culture is referred to as perceived brand localness (Swoboda, Pennemann, & Taube, 2012). Consumers may view brands that are not local as a threat to the national economy of the consumers (Shimp & Sharma, 1987). In the minds of ethnocentric customers, global brands pose an economic and cultural threat and ethnocentric customers with low levels of cosmopolitanism tend to have negative evaluations of foreign brands and such ethnocentric customers may sacrifice gains such as low price and higher quality to enjoy the psychological benefit of purchasing local brands (Steenkamp, Batra, & Alden, 2003). Ethnocentric customers prefer what belongs to their own group (Shimp & Sharma, 1987) which makes them prefer local celebrities (Chao, Wührer, & Werani, 2005). This attitude of ethnocentric customers would assist foreign products or brands to be looked upon as an icon of the local community (Dimofte, Johansson, & Ronkainen, 2008).

On the other hand, non-ethnocentric customers are more cosmopolitan and possess a higher level of cultural openness (Baughn & Yaprak, 1996) and they do not tend to have negative evaluations on foreign brands like ethnocentric customers. Non-ethnocentric customers evaluate products based on its attributes rather than whether it is local or foreign (Bamber et al., 2012) and does not consider the nationality of the celebrities that endorse products (Jerzyk & Wyczynski, 2015)

In many cases, local brands or products are looked upon as representatives of the local community (Dimofte et al., 2008). Thus, using local celebrities are more effective in creating positive consumer attitudes regardless of the product category (Jain, Roy, Kumar, and Kabra, 2010). Because the positive effects of localness on preference towards brands is strong in both developed and developing countries (Swoboda et al., 2012), foreign firms may use local celebrities to increase perceived brand localness. Based on these arguments, it could be hypothesized that,

> **H2:** There is a difference between the perceived brand localness of ethnocentric and non-ethnocentric customers for processed food products of foreign brands with local celebrity endorsement

4. Methodology

Quantitative research was conducted in line with a positivist epistemology as the main objective of this study was to see whether the celebrity endorsement creates a difference on purchase intention and perceived brand localness among ethnocentric and non-ethnocentric customers foreign processed food brands. In this study the key independent variable was local celebrity endorsement. The two dependent variables are consumer purchase intention and perceived brand localness.

4.1 Data collection

To test the previously stated hypotheses, data were collected by a structured online questionnaire (Annexure 1). Data was collected from 135 consumers who are over 18 years old and residing in Sri Lanka because they are adults who have the knowledge, need and the capability to purchase and consume processed food products. The study used a convenience sampling method since convenience sampling is affordable, easy, and ready availability of subjects (Etikan, Musa, & Alkassim, 2016) and an updated listing of the population was not easily accessible (Sekaran, 2003).

4.2 Measures

First, the level of consumer ethnocentrism of the sample was measured using the Consumer Ethnocentrism Tendencies Scale also known as the CETSCALE (Shimp & Sharma, 1987). This multi-item scale was slightly modified (the general term “American” was replaced with “Sri Lankan” and the term “Products” was replaced by “Processed Food Products”) to capture the level of ethnocentrism in Sri Lanka. The original 7-degree scale was replaced by a five-point Likert scale. Based on the average score of each individual, the sample was divided to ethnocentric and non-ethnocentric consumers.

Second, the purchase intentions and perceived brand localness of ethnocentric and non-ethnocentric consumers were measured using a five-point Likert scale. The scale was from 1 (strongly disagree) to 5 (strongly agree). Items to measure purchase intention were adapted from the previous studies by Jamil and Rameez ul Hassan (2014) and Pornpitakpan (2004). Items to measure perceived brand localness were adopted from the previous study by Steenkamp et al. (2003).

Measurement items were taken from previous studies to ensure reliability and validity. The data gathered through the circulation of questionnaires was analyzed through the statistical computer package, SPSS 22. The data was analysed using a comparison of means and by using independent samples tests.

A reliability test using Cronbach’s Alpha and normality of the data was tested through skewness and kurtosis. The sample was then grouped into ethnocentric and non-ethnocentric based on the individual score of the CETSCALE by Shimp and Sharma (1987) where individuals with an average score (out of the 13 questions of the CETSCALE) of more than 4.00 were grouped as ethnocentric and individuals with a score of less than 4.00 were grouped as non-ethnocentric. In previous studies such as Watson and Wright (2000) and Shimp and Sharma (1987), high and low ethnocentric level was measured based on top half and bottom half of the scale or in other words, 3.00 was the differentiating score. But the present study uses 4.00 as the differentiating score since an average score of 3.00 to 3.99 would consist of respondents who are in a “neither agree nor disagree” attitude implying they are neither ethnocentric or non-ethnocentric. However, respondents who have an average score of more than 4.00 are implied to be highly ethnocentric.

After grouping the sample into two groups, a mean comparison was done for various variables focused on this study against ethnocentric and non-ethnocentric groups to identify the differences in responses of the two groups for each variable conforming to previous studies (Watson & Wright, 2000; Jerzyk & Wyczynski, 2015). The mean values of the two groups were analyzed through mean values in group statistics followed by the independent samples test which includes Levene's test to test whether equal variances between the two groups are assumed and probability of T-statistics to identify whether there is a significant difference between the means of the two groups as done in previous studies by Jerzyk and Wyczynski (2015) and Watson and Wright (2000) and as a result the significance level in the analysis was 5% (0.05).

5. Analysis and results

5.1 Sample

Data for the study was collected from a sample of 135 respondents out of which 50 were ethnocentric and 85 were found to be non-ethnocentric. The unit of analysis was Sri Lankan customers who purchase and consume food brands. The sample characteristics in Table 1, when analyzed, represent 81 male and 54 female respondents with a majority between the age group 23 to 25 years (82). The majority of the sample is in the undergraduate level (51) of education. This could be an explanation to the income level of 50 individuals falling under less than Rs.30,000 a month.

Table 11: Sample Attributes

Attribute	Detail	Frequency
Gender	Male	81
	Female	54
Age	18-22	13
	23-27	82
	28-32	19
	33-36	9
	Above 36	12
Highest level of education	Ordinary Level	5
	Advanced Level	21
	Undergraduate	51
	Post Graduate	35
	Professional	20
	Qualification	3
	Doctorate	
Monthly income level	Rs.0 – 30000	50
	Rs.30000 – 60000	28
	Rs.60000 – 90000	20
	Rs.90000 – 120000	17
	Rs.120000 and above	20

The reliability test using Cronbach's Alpha represented an alpha value of 0.907 for the items which were used to collect data hence the reliability of the data is high and deemed suitable for further analysis. The normality of the data was tested through skewness and kurtosis and since the values of skewness and kurtosis were between +1 and -1 the data was considered as normally distributed. After preparing the data, the analysis was done through descriptive statistics, group statistics, mean comparisons and independent samples tests.

5.2 Comparison of mean values

The sample of 135 respondents was grouped based on the level of ethnocentrism of each individual. Thus, the sample was grouped to 50 respondents who are ethnocentric (equal or more than 4.00) and 85 respondents who are non-ethnocentric (less than 4.00) for the analysis. The group statistics followed by the independent samples test which includes Levene's test (significance) and probability of T-statistics (significance; 2-tailed) used to identify whether there is a significant difference between the means of the two groups is shown in Table 2 (purchase intentions) and Table 3 (perceived brand localness).

According to purchase intention without celebrity endorsement in Table 2, the mean purchase intention is 3.94 for ethnocentric customers and 3.84 for non-ethnocentric customers. The difference of the two means is 0.1 where the mean of the ethnocentric customers is 2.65% higher. In identifying whether there is a significant difference between the means of ethnocentric and non-ethnocentric customers using the Levene's test, in a situations where there is no celebrity endorsements the probability of F statistic is 0.056 and probability of T-statistic test for equality of means is 0.493 which are insignificant since they are higher than 5%; therefore we recognize that without celebrity endorsements there is no variance or difference between the purchase intentions of ethnocentric and non-ethnocentric customers.

Table 2: Mean comparisons for purchase intentions

		Group Statistics			Independent Samples Test	
	Ethnocentric Level	**Mean**	**Standard Deviation**	**Standard Error Mean**	**Levene's Test (Significance)**	**T-Statistics (Significance; 2-tailed)**
Purchase intention without celebrity endorsement	Ethnocentric	3.94	.867	.123	.056	.493
	Non-Ethnocentric	3.84	.829	.090		
Purchase intention with Sri Lankan celebrity endorsements	Ethnocentric	4.26	.828	.117	.100	.000
	Non-Ethnocentric	2.62	.913	.099		
Purchase intentions with foreign celebrity endorsements	Ethnocentric	3.54	1.034	.146	.237	.000
	Non-Ethnocentric	2.67	.931	.101		

According to purchase intention with Sri Lankan celebrity endorsements, the difference of the mean purchase intentions of ethnocentric customers is 1.64 (62.6%) higher than non-ethnocentric customers (4.26 – 2.62). As per the Levene's test, the probability of F Statistic is insignificant (0.100) but further analyzing, the probability of T-statistic test for equality of means is significant (0.000) suggesting that there is a difference between the means of purchase intentions of ethnocentric and non-ethnocentric customers with Sri Lankan celebrity endorsements. These results provide strong support for Hypothesis 1a since there is a clear difference between the purchase intentions of ethnocentric and non-ethnocentric customers with local celebrity endorsement.

In relation to purchase intentions with foreign celebrity endorsements the difference of the mean purchase intentions of ethnocentric customers with foreign celebrity endorsement is 0.87 (32.5%) higher than non-ethnocentric customers (3.54 – 2.67). As per the Levene's test, the probability of F Statistic is insignificant (0.237) but further analyzing, the probability of T-statistic test for equality of means is significant (0.000) suggesting that there is a difference between the means of purchase intentions of ethnocentric and non-ethnocentric customers with foreign celebrity endorsements.

When comparing the means of non-ethnocentric customers, compared to the product not being endorsed by any celebrity (3.84) the mean purchase intention is 31.8% lower with Sri Lankan celebrity endorsements (2.62) and also 30.5% lower with foreign celebrity endorsements (2.67). Both the above mean values with local and foreign celebrity endorsement are lower than the mean value without any celebrity endorsements and are of similar values (2.62 and 2.67) implying that non-ethnocentric customers do not consider the nationality of celebrities.

Considering the means of ethnocentric customers, compared to the mean purchase intention without any celebrity endorsements (3.94), the mean purchase intention has increased by 8.1% with Sri Lankan celebrity endorsements (4.26) and reduced by 10.2% with foreign celebrity endorsements (3.54). These findings on ethnocentric customers strongly support Hypothesis 1b since there is an increase in purchase intentions of ethnocentric customers when foreign processed food products are endorsed by local celebrity endorsement.

As seen in Table 3, the difference of the mean scores of perceived brand localness with Sri Lankan celebrity endorsement of ethnocentric customers is higher (4.48, 4.30, 4.24, 4.10) than non-ethnocentric customers (3.29, 3.27, 3.21, 2.67) at all four situations above with all the means of ethnocentric customers being higher by more than 30% (36.2%, 31.4%, 32.09%, 53.6%) compared to the means of non-ethnocentric customers. According to the Levene's test there is a variance or difference between the mean perceived brand localness of ethnocentric and non-ethnocentric customers. This implies that when a Sri Lankan celebrity is endorsing a product or a brand, ethnocentric customers perceive that such product or brand looks Sri Lankan, represents Sri Lanka, is a good symbol of Sri Lanka and that it is only sold in Sri Lanka. Since the above mean values for ethnocentric customers are greater than 4.00 we can imply that it is a strong perception. However, non-ethnocentric consumers do not have such strong perceptions and the means of perceived brand localness of ethnocentric customers are higher than non-ethnocentric customers by more than 30%, showing a clear difference between the two groups. These results strongly support Hypothesis 2 indicating that there is a difference between the perceived brand localness of ethnocentric and non-ethnocentric customers with local celebrity endorsement.

Table 3: Mean comparisons for perceived brand localness

		Group Statistics			Independent Samples Test	
	Ethnocentric Level	**Mean**	**Standard Deviation**	**Standard Error Mean**	**Significance**	**Significance (2-tailed)**
Customers think the brand looks like a Sri Lankan brand	Ethnocentric	4.48	.677	.096	.006	.000
	Non-Ethnocentric	3.29	.961	.104		
Customers perceive that the brand represents "Sri Lanka"	Ethnocentric	4.30	.614	.087	.000	.000
	Non-Ethnocentric	3.27	1.005	.109		
Customers perceive the brand as a very good symbol of "Sri Lanka"	Ethnocentric	4.24	.822	.116	.085	.000
	Non-Ethnocentric	3.21	.977	.106		
Customers think that brand appears to be sold only in Sri Lanka	Ethnocentric	4.10	.886	.125	.285	.000
	Non-Ethnocentric	2.67	.892	.097		

6. Discussion and findings

Although in general, ethnocentric customers show a higher purchase intention for domestic products over foreign products (Balabanis & Diamantopoulos, 2004; Bamber et al., 2012) based on the results of this study it was found that local celebrity endorsement has increased the purchase intentions of ethnocentric customers which is consistent with the studies by Chao et al. (2005) and Jerzyk and Wyczynski (2015). Jerzyk and Wyczynski (2015) have identified that a local celebrity may increase the trust towards the products and the brand among ethnocentric customers which could be a reason for present findings. The purchase intentions for non-ethnocentric customers with celebrity endorsement has reduced indicating that non-ethnocentric customers do not focus whether the celebrity is local or not but would focus on the creativity and the communicated message of an endorsement (Jerzyk & Wyczynski, 2015). Hence, there is a difference in purchase intentions of ethnocentric and non-ethnocentric customers with local celebrity endorsement.

According to the group statistics on perceived brand localness, there is a clear difference among ethnocentric and non-ethnocentric customers where the perceived brand localness of ethnocentric customers is higher. Reasons for perceived brand localness among ethnocentric customers to be higher could be the ability of creating trust and positive brand image among ethnocentric customers by endorsements using local celebrities (Jerzyk & Wyczynski, 2015) because naturally ethnocentric customers prefer what belongs to their group (Shimp & Sharma, 1987) which results in their preference towards local celebrities (Chao et al., 2005) and subsequently help foreign products or brands to be looked upon as representatives of the local community (Dimofte et al., 2008).

However, non-ethnocentric customers who do not consider the nationality of celebrities (Jerzyk & Wyczynski, 2015) tend to evaluate products using product attributes rather than the country of origin of such products (Bamber et al., 2012) and the creativity and content of celebrity endorsements (Jerzyk & Wyczynski, 2015). The above reasons explain the low mean perceived brand localness found in the results of this study among non-ethnocentric customers. Hence, there is a difference in perceived brand localness among ethnocentric and non-ethnocentric customers with local celebrity endorsement.

In relation to the results on purchase intentions of ethnocentric customers without and with celebrity endorsements, it was found that that there is an increase in purchase intentions of ethnocentric customers with local celebrity endorsement (Chao et al., 2005; Jerzyk & Wyczynski, 2015). A reason for such results could be that ethnocentric customers evaluate highly what they consider as belonging to their own group leading to preference of domestic products (Shimp & Sharma, 1987) as well preferring local celebrities whom they like and consider as their own and may be classically conditioned to liking a product because they like their own celebrity (Chao et al., 2005; Kahle & Homer, 1985). However, the results have further confirmed that ethnocentric consumers show a stronger preference for local celebrities

(Jerzyk & Wyczynski, 2015). Henceforth, local celebrity endorsement increases purchase intentions of ethnocentric customers.

7. Conclusion

As per the analysis and discussion presented in the present study, it was identified that the local celebrity endorsement creates a difference in purchase intentions and perceived brand localness for processed food products of foreign brands among ethnocentric and non-ethnocentric customers where the mean score for ethnocentric customers is higher. Furthermore, the local celebrity endorsement increases purchase intention for processed food products of foreign brands which implies that using a local celebrity is a good opportunity for foreign firms to moderate the influences of consumer ethnocentrism. However, since consumer ethnocentrism is a discrimination hazard which is also a source of liabilities of foreignness, reducing the influences of consumer ethnocentrism through local celebrity endorsements assists in mitigating liabilities of foreignness. Thus, it may be established that local celebrity endorsement is a suggested method to mitigate liabilities of foreignness.

Moreover, the present study contributes to the theory of liabilities of foreignness by introducing a method for foreign firms to overcome such liabilities in a host country. It also contributes to the knowledge on local celebrity endorsement with regards to purchase intention and perceived brand localness among ethnocentric and non-ethnocentric customers. Finally, the study creates a link between theories such as liabilities of foreignness, consumer ethnocentrism, local and foreign celebrity endorsement, purchase intention and perceived brand localness.

8. Limitations and direction for further research

This study is prone to limitations as mentioned below. The sample size of the study was relatively small and therefore it could be explored with a larger sample size. The study was conducted only to see the differences between ethnocentric and non-ethnocentric customers through comparison of means therefore the impacts of the variables in concern should be measured. Finally, the ethnocentrism levels, purchase intentions and perceived brand localness are subject to variation based on individual customers and across time periods.

Therefore, future research on the similar issue could be conducted to measure the ethnocentrism levels of consumers of different countries with a larger sample size in consideration. Research on the impacts of celebrity endorsement on perceived brand localness can be further expanded and studies should be conducted to study more on ethnocentric and non-ethnocentric customers in Sri Lanka. A qualitative study also could be done to gain more insights to the matters studied in this research. Finally, to study on the impacts of celebrity endorsement on purchase intentions and perceived brand localness together could be conducted on ethnocentric and non-ethnocentric customers.

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Annexure 1: Survey Questionnaire

Section 1: Demographics

* Required

1. Gender *

- ○ Male
- ○ Female

2. Age *

- ○ 18-22
- ○ 23-27
- ○ 28-32
- ○ 33-36
- ○ Above 36

3. Highest level of education *

- ○ Ordinary Level
- ○ Advanced Level
- ○ Undegraduate
- ○ Post Graduate
- ○ Professional Qualification
- ○ Doctorate

4. Monthly income level *

- ○ Rs. 0 - 30000
- ○ Rs. 30000 - 60000
- ○ Rs. 60000 - 90000
- ○ Rs. 90000 - 120000
- ○ Rs. 120000 and above

5. How much time on average do you spend on media a day? *

	Never	Less than 1 hour	1 - 2 hours	2 - 3 hours	3 - 4 hours	More than 4 hours
Print Media						
Social Media						
Television						
Radio						
Internet						

6. Do you purchase and/or use processed food products? (Sausages, pre-cooked frozen food, jams and sauces, juices and beverages, dried products, canned products, instant noodles etc) *

- Yes
- No

7. If your answer to Question 6 is "yes", how often do you purchase the following types of processed food products?

	Daily	2-3 times a week	Once a week	Twice a month	Once a month	Less than once a month	Never
Jams and Sauces							
Juices and Beverages							
Dried Products							
Pre-cooked Frozen Products							
Canned Products							
Instant Noodles							

Section 2: Consumer ethnocentrism

1. American people should always buy American-made products instead of imports.
2. Only those products that are unavailable in the U.S. should be imported.
3. American products, first, last, and foremost.
4. Purchasing foreign-made products is un-American.
5. 7. A real American should always buy American-made products.
6. 8. We should purchase products manufactured in America instead of letting other countries get rich off us.
7. 11. Americans should not buy foreign products, because this hurts American business and causes unemployment.
8. 12. Curbs should be put on all imports.
9. 13. It may cost me in the long-run but I prefer to support American products.
10. 14. Foreigners should not be allowed to put their products on our markets.
11. 15. Foreign products should be taxed heavily to reduce their entry into the U.S.
12. 16. We should buy from foreign countries only those products that we cannot obtain within our own country.
13. 17. American consumers who purchase products made in other countries are responsible for putting their fellow Americans out of work.

Section 3: Purchase intention

1. Do you purchase processed food products of foreign brands? (yes, no)
2. Do you purchase processed food products of Sri Lankan brands? (yes, no)

Please rate the degree of your agreement or disagreement on the following statements regarding purchase intention (Likert scale)

3. I purchase processed food products of foreign brands without considering any celebrity endorsements
4. The presence of a Sri Lankan celebrity in an advertisement encourages me to buy a processed food product of a foreign brand
5. The presence of a foreign celebrity in an advertisement encourages me to buy a processed food product of a foreign brand
6. In a store, I will seek out the same foreign processed food brand that is endorsed by a Sri Lankan celebrity and not by a foreign celebrity
7. In a store, I will seek out the same foreign processed food brand that is endorsed by a foreign celebrity and not by a Sri Lankan celebrity
8. I would find out more about a processed food product of a foreign brand if it was endorsed by a Sri Lankan celebrity

Section 4: Perceived brand localness, price, quality and brand familiarity
Please rate the degree of your agreement or disagreement on the following statements regarding perceived brand localness (Likert scale)

1. To me, a brand looks like a Sri Lankan brand when it is endorsed by a Sri Lankan celebrity
2. I perceive that brands represent “Sri Lanka” when endorsed by a Sri Lankan celebrity
3. To me, a brand endorsed by a Sri Lankan celebrity is a very good symbol of “Sri Lanka”
4. I believe that a particular brand appears to be sold only in Sri Lanka when a Sri Lankan celebrity is endorsing it

Please rate the degree of your agreement or disagreement on the following statements (Likert scale)

5. I perceive a processed food product to be of a foreign brand if it is of a higher price
6. If processed food products of a foreign and a Sri Lankan brand are priced the same, I would prefer to purchase the foreign brand
7. I perceive a processed food product to be of a foreign brand if it is of a higher quality
8. If processed food products of a foreign and a Sri Lankan brand are of the same quality, I would prefer to purchase the foreign brand
9. I believe processed food brands that are familiar to me are “Sri Lankan” brands
10. The longer the time period that a brand has been in Sri Lanka, the more I consider it to be a Sri Lankan brand

Smart phone usage and undergraduate academic performance

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Abstract

The main purpose of this study is to assess the impact of smartphone addiction on the academic performance of undergraduates. This study commenced with an in-depth review of literature which was carried out based on empirical studies by scholars across the globe. The conceptual framework of the study consisted of one independent variable – smartphone addiction, the dependent variable – academic performance, and a moderating variable – gender. Smartphone addiction constitutes of six dimensions – information seeking, perceived enjoyment, social relationships, mood regulation, pastime, and conformity that help form the conceptual framework. Data was collected through a structured survey questionnaire with a five-point rating scale from 400 undergraduates from four private and four state universities. Out of the 400 respondents, 203 respondents were identified as addictive smartphone users. Data was analysed based on multiple regression analysis and independent sample t-test. The results indicate that there is a significant negative relationship between smartphone addiction and academic performance, which was also evident through the comparison of academic performance between addictive and non-addictive smartphone users. Further, it was identified that there is no moderating impact of gender on the relationship between smartphone addiction and academic performance as the impact of smartphone addiction on academic performance was the same.The gathered data was analysed comprehensively and it was identified that smart phone addiction has a negative impact on academic performance of undergraduates. This study is intended to add invaluable contributions to an unexplored area of Sri Lankan academia and provide a basis for future research on students' academic performance relating to modern technology and trends.

Keywords: Academic Performance; Gender; Smartphones; Smartphone Addiction; Social Relationships

1. Introduction and research problem

The Central Bank of Sri Lanka (2017) had stated that there are 113 mobile phones for every hundred people in their reports and 42% of the Sri Lankan population are Smartphone users. This clearly demonstrates the growing demand for smartphones and its popularity. The data collected from EDUCAUSE centre for research and analysis shows that 86% of undergraduates owned a smartphone in 2014, which signifies an increase from

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76% in 2013 (Dahlstrom & Bichsel, as cited in Samaha & Hawi, 2016). This clearly shows that Undergraduate smartphone owners around the world are increasing drastically every year.

. Smartphone users have become so attached to their devices that they feel they cannot function without it and their use and preoccupation with the smartphone results in the neglect of the other assignments and tasks. (Aljomaa, Al.Qudah, Albursan, Bakhiet, & Abduljabbar, 2016). Although the smartphone use may pose a threat to the academic performance of students, many studies reveal that a smartphone can also be used as an educational tool. For example 15% of American young adults between 18 and 29 years of age are classified as heavily dependent on smartphones for online access for their education (Smith, 2015).

With the rapid evolution of technology and continuous advancement of a variety of smartphones, a new form of obsession has taken place within the past decade. People today are found to be obsessed and addicted to their smartphones and symptoms of this addiction are found amongst people in almost every part of the world. Smartphone addiction amongst the younger generation and undergraduates today has developed into an acute problem, not only impacting their own lives in a variety of different ways but also raising many concerns amongst parents and educators around the world. According to McAllister, (2011) 60 percent of US college students are addicted to their smartphones as these devices have replaced the lap-top or desk-top computer as the preferred method of accessing the internet. In a recent study of Hawi and Samaha (2016), 293 undergraduate students participated in an online survey questionnaire and the results showed that male and female university students were equally disposed to smartphone addiction and furthermore, undergraduate students who were at a high risk of smartphone addiction were less likely to achieve cumulative GPAs of distinction or higher. Evidence from a study of Liyanage (2015) of students at the University of Kelaniya shows that 71% of students have pre-paid mobile connections with an expenditure of more than 800 rupees per month on mobile services, at least 2 hour-long calls per day and 50-100 SMS messages per day. He further states that students spend more time on their smartphones than their time on studies. Litreature on smartphone usage reveal that that education systems in developed countries are widely adopting smartphones in the teaching and learning process. This shows that although undergraduates would be addicted to their smartphones, this addiction can be utilised as a powerful instrument for academic purposes.

Taking the above factors into consideration, the nature of impact (whether negative or not negative) on the academic performance of Sri Lankan undergraduate students as a result of smartphone addiction requires to study.

It is apparent that there is a prevailing addiction to smartphones by undergraduate students in Sri Lanka, and therefore, it is important to study the impact that it has on their academic performance. Although similar studies have been conducted in other regions in the world, the studies carried out in Sri Lanka have mainly been on factors that influence smartphone addiction; thus far there have been no studies or analysis conducted in the Sri Lankan context on the impact of smartphone addiction on the academic performance of undergraduate students. Therefore, the lack of empirical studies conducted on this topic shows the significance of conducting this research in the Sri Lankan context. Accordingly, the objectives of the present study are as follows; (a) to examine the difference in the academic performance between undergraduates who are addicted and not addicted to their smartphone, (b) to identify the most salient determinant that influences smartphone addiction in relation to academic performance of undergraduates in Sri Lanka, (c) to assess the impact of smartphone addiction on academic performance among undergraduates in Sri Lanka, and (d) to study the moderating impact of gender on the relationship between smartphone addiction and academic performance in Sri Lanka.

2. Literature review

2.1 Addiction

According to (Hole & Hawker, 2004) addiction is defined in the Oxford Dictionary as physically dependent on a substance. Addiction is a term with a long history of reference to alcohol and drug abuse, arising from the addictive effect that those substances have on the human body and brain. However, taking large amounts of drugs or alcohol for a long period are not the only types of addiction (American Psychological Association [APA] cited in Bolle, 2014). People can develop addictions not only towards substances, but also toward specific behavioural patterns (APA, cited in Bolle, 2014). The positive reinforcement of a substance or action, the time between consumption or action, and physiological response determines how addiction originates (Carbonell, Oberst, & Beranuy, 2013) .Thus, when the positive reinforcement is strong, and there is a short time between an action with a corresponding physiological response results in an action becoming addictive.

There are many types of addictions of which the researcher describes ‘behavioural addiction’ in the section below.

2.2 Behavioural addiction

Behavioural addiction is defined by APA, as cited in Bolle (2014) as a disorder where a person’s behaviour only would function to produce pleasure and to relieve feelings of pain and stress, in which a person fails to control the behaviour and continues to execute (addictive) behaviour despite significant harmful consequences. APA further states that smartphone and internet addictions are different from other addictions such as alcohol and drugs. They also mention that drug addictions are not behavioural addictions but as substance dependence.

In behavioural addiction, it is the process that gives a pleasant feeling to a person. In the process of addictive behaviours, dopamine and endorphin are being released and it is responsible for the reward and pleasurable feeling of the behaviour. When the reward is not present, dopamine is still released because of the anticipation of the reward. Therefore, gambling and social media are so addictive (Everitt & Robbins, 2005).

2.3 Symptoms of behavioural addiction

The following are the symptoms of behavioural addiction cited in APA Diagnostic Classification (1994):

- Tolerance building: more and more is needed to satisfy an individual's needs
- Withdrawal: when a substance or action cannot be performed, anxiety or unpleasant feelings arise
- Loss of control: behaviour is not in control anymore
- Preoccupied by the addiction: other activities, such as recreation, social activities, and work are planned around the addiction
- The time planning, doing, and recovering from the addiction is controlling life

Therefore, if a smartphone user demonstrates any of the above symptoms as a result of the influence of the smartphone, it can be stated that the person is addicted to their smartphone. The section below discusses smartphone addiction in detail.

2.4 Smartphone addiction

Smartphone addiction is defined as a behavioural addiction due to the loss of control by excessive immersion and obsession to smartphone use (Kim, et al., 2015). According to Lin et al. (2015), smartphone addiction could be considered a form of technological addiction. Griffiths (1996) defined these addictions as non-chemical behavioural addictions that involve human and machine interaction. In addition, Park aknd Lee (2012) defines smartphone addiction as the exessive use of smartphones in a way that is difficult to control and its influence extends to other areas of life in a negative way.
Carbonell et al. (2013) state that functions of a smartphone such as mobile gaming and social networking can make a strong positive reinforcement (pleasurable experience) for its users which can create addiction. The behaviour of a person who is addicted to a smartphone can include an intense focus on the smartphone or a specific application such as frequent checking, posting or interacting on social media platforms via the smartphone. If the smartphone or application was to be removed from the addicted person, panic attacks or feelings of discomfort emerge (Shaffer, as cited in Bolle, 2014).

Different people use smartphones for different reasons; according to the International Business Times (2012), a survey was conducted by GSM Arena on the 'top ten reasons why people use a smartphone'. The reasons are detailed in Table 12 below.

Table 12: Top ten reasons for smartphone use

Reason	Description	Survey Findings on Frequent Usage
Social networking	The use of online platforms that focus on building social networks across the world that allow users to share common interests, notifications of activities or events and even daily thoughts. Facebook, Twitter and Google+ are few popular social networking platforms.	- Undergraduates below the age of 24
Taking photographs	A good camera on a phone is observed as a great utility by users, and manufacturers have hastened to comply with this.	- Teenagers
Listening to music	The commoditisation of smartphones as a result of its portability together with many excellent music apps available on them, they have replaced other music devices (e.g. MP3 players).	- More than 95% of population surveyed
Watch online videos	Since smartphones are becoming a portable computer, it has been used to watch online videos.	- Men are more likely to watch videos than women - 52% are watched at home between 5pm and 11pm
Mobile gaming	The thrill of mobile gaming is another reason to use a smartphone because the new generation of smartphones have high graphics and processing power.	- Youth (below the age of 24) - 60% enjoy games daily

Reason	**Description**	**Survey Findings on Frequent Usage**
Web browsing	People use their smartphones to browse the internet to seek information.	- Used daily by 78.6% of the population surveyed
Installing new apps	Smartphones allow users to install applications (apps) of their choice on their device.	- Teenagers - 45% of the population surveyed
Send SMS	One of the most obvious advantages of any mobile phone and a smartphone is the ability to send a text message (SMS). Although its popularity has declined a little over the years the survey shows that a large population still continues to use the SMS messaging feature very often.	78.7% of the population surveyed
Alarm clock	The new generation of smartphone users use their devices as an alarm clock.	- Age group 25-32 - 82.7% of the population surveyed
Mobile internet usage	The lure of mobile internet-on-the-go eases accessing the internet from a smartphone.	- 90% of the population surveyed - 71% use the feature daily

Source: International Business Times, 2012

The reasons highlighted in the table above illustrates that smartphones can be used by people for different purposes. It is therefore challenging to measure smartphone addiction through a single dimension, and thus, it should be deconstructed into multiple measurable dimensions.

2.5 Smartphone addiction dimensions

There have been many studies conducted on smartphone addiction that identify and detail the different dimensions of it. This section discusses six significant dimensions that encompass them.

Information seeking

Information seeking can be defined as searching and locating information by using sources of information – whether printed or digital (online). Information seeking can be done for different purposes; in an educational setting information seeking is done by students for school or university projects (Rahimi & Bayat, 2015). Yoo (2011) states that today, the internet acts as the main source for information seeking by individuals. Internet users may experience an addiction precursor stage when they use email or webpages for information seeking (Chen, 2006). Internet addiction is likely to be positively reinforced if the need of information seeking is gratified immediately. Song, Larose, Eastin, and Lin (2004) confirmed that the reinforcing effect from the gratification of information seeking may lead to users' maladaptive dependency on the internet. In the context of this study, it can be identified that information seeking may be an important motive because many undergraduates have been using their smartphones to connect to the internet. According to the study conducted by Zhang, Chen, and Lee (2014), if an individual uses a smartphone heavily to seek information, then he or she is more likely to get addicted to the device.

Perceived enjoyment

Perceived enjoyment is defined as the degree to which the activity of using technology is perceived to be enjoyable in its own right apart from any performance consequences resulting from system usage (Teo & Noyes, 2011). Individuals use technology for, gaming, social networking taking photos and for other various purposes; thus leading to enjoyment. Moghavvemi, Sharabati, Paramanathan, and Rahin (2016) identify that individuals mostly use the internet to participate in social networking activities because the interaction process results in fun and enjoyment. Turel and Serenko (2012) pointed out the dark sides of enjoyment in the context of social networking websites. They found that if users perceive the websites to be enjoyable, then they are likely to become addicted to using the websites. Similarly, smartphone is currently the most popular medium for information and communication technology and it significantly affects people's everyday lives. With its multi-function nature ranging from basic mobile phone functions (e.g., making calls and sending text messages) to many value-added functions (e.g., social networking, photo-taking, music, video, and gaming), using a smartphone can be highly enjoyable (Chen, Zhang, & Zhao, 2015). Therefore, Zhang et al. (2014) states that if an undergraduate experiences a high level of enjoyment when he or she use a smartphone, then he or she is more likely to get addicted to the device.

Social relationships

Xu et al. (2012) referred to social relationships as “the need to form long-term relationships with others”. Smartphones are popular among people for the applications they offer to the users (Lakshmi, Kumar, & Phil, 2014), including social networking sites such as Google+, Twitter, Facebook, Instagram. These social media sites help people to continuously integrate with society with ease. The integration of the internet and mobile services has produced great convenience in the daily lives of smartphone users. Smartphones enable global communication regardless of time and place. People are more connected now than ever with applications such as Skype and Viber – allowing for free phone calls to friends and family anywhere in the world (Groarke, 2014).

Research on cyber-relationship addiction shows that many users who seek social relationships online tend to have pat

hological problems of internet usage Larose et al. (2004). Zhang et al. (2014) state in their research that many users are likely to view the smartphone as an important tool of interpersonal communication. Therefore, their study proposes that if a user has a high level of social relationships motive in smartphone usage, the individual is more likely to be addicted to the smartphone.

Mood regulation

Mood is an affective state that plays a significant role in our lives influencing our behaviour, driving social communication and shifting our consumer preferences (LiKamWa, et al., 2013). Mood regulation is defined as mood changes due to the thrill or relief created by using smartphones (Turel, Serenko, & Bontis, 2008). With the rise of the smartphone, social networking platforms such as Facebook and Twitter go hand-in-hand with these pocket computers, while the rapid improvement of phone cameras has given a platform for photo sharing applications such as Instagram (Briden, 2014). As LaRose et al. (2004) state, in order to reduce negative feelings such as loneliness, anxiety, stress and depression individuals turn to their smartphones with internet enabled on it to regulate their mood by watching videos, listening to music, playing games and using social networking platforms. Zhang et al. (2014) study proposes that if a user often experiences mood regualtaions when he or she uses a smartphone, then that user is more likely to have high level of smartphone addiction.

Pastime

William Stephenson (1964), a British social scientist first introduced the concept play theory where it emphasizes on how an individual users media for his or her satisfaction and also how media bring changes in his or her lives according to its content. According to the play theory, pastime refers to occupying free time with no productive interest (Yoo, 2011). Prior research contends that pastime is a primary motive for an adolescent to play video games which may further lead to heavy play (Griffiths & Hunt, 1998). According to Lee (2002) an inclination to boredom has been found to significantly influence game addiction and players who have an inclination to boredom may experience negative consequences of it such as addiction (Chiu, et al., 2004). According to Aljomaa et al. (2016), the smartphone has become a substitute for the computer and is now the most effective means of entertainment, amusement and pastime. Therefore, as these studies imply, people today are most certainly using smartphones as a pastime. Zhang et al. (2014)'s study proposes that if a user has a strong motive of using a smartphone to pastime, then that person is more likely to be addicted to using the device.

Conformity

Conformity highlights individuals' need of avoiding peer disapproval (Stewart & Devine, 2000). One type of conformity is "normative influence," which manifests itself when people conform to gain approval, seek social harmony or to avoid disapproval and rejection (Beasley, et al., 2016). In the context of smartphones, recent research has shown that individuals use smartphones to gain identification and avoid disapproval among their friends (Khang, et al., 2013). The results of Beasley et al. (2016) research suggests that the majority (60%) of students are frequently prompted to use their phones because everyone else is and it also revealed that they sometimes use their phones so that they don't miss out on what others are experiencing – such as when they want to view a video that others are watching. Moreover, the findings of Burket (2015) state that young adults aged between 18 and 25 years often use their smartphones to bond socially or to gain and maintain peer status. Therefore, according to the study of Zhang et al. (2014), if a smartphone user has a high level of conformity, then it is likely that the user will keep using the device and become addicted.

Applying Brown's addiction model for smartphone addiction

Applying a model to identify addictive behaviour would prove useful in evaluating whether smartphone addiction is possible (Brown, 1991). This model was later adopted by Griffiths (1996) to identify whether a particular behaviour falls into the category of addiction. Brown's model for addiction was developed with regard to gambling addictions, and is rooted in seven comprehensive criteria as illustrated in Figure 1 below.

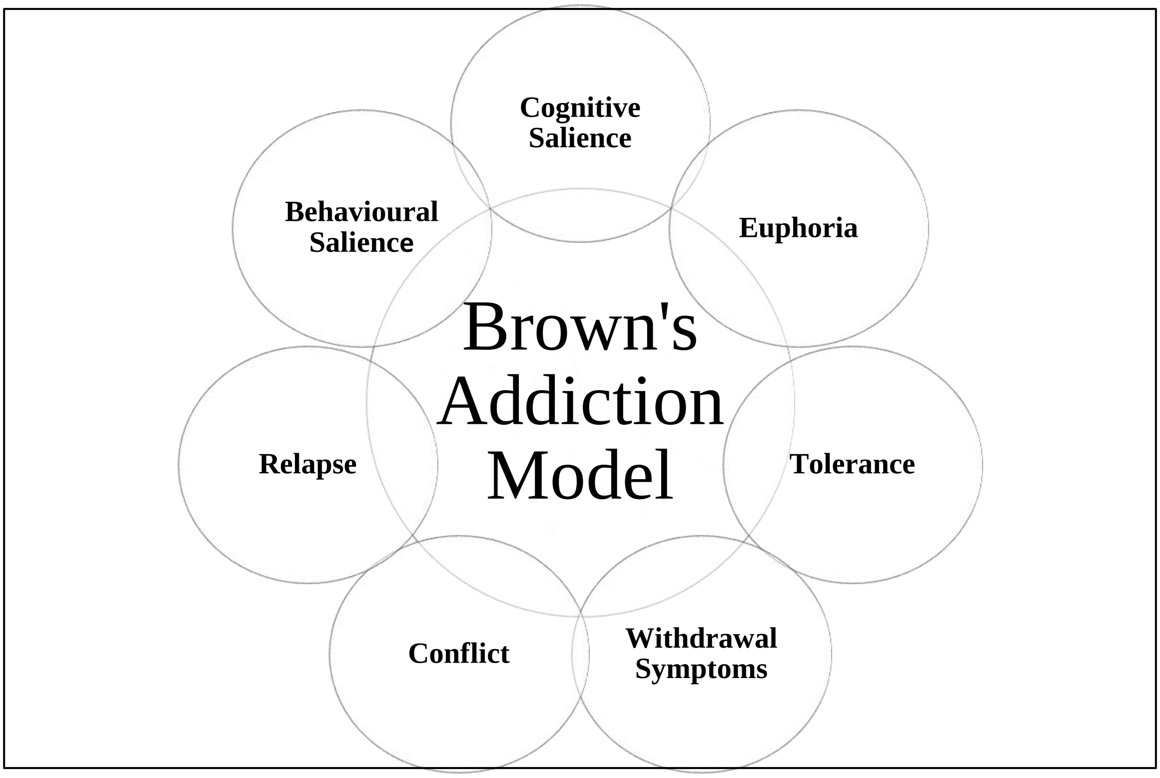


Figure 1: Brown's Addiction Model
Source: Lundquist, et al., 2014

Lundquist et al. (2014) state that the seven criteria in Brown's Addiction Model can be adapted to smartphone use too. They continue to describe them as follows:

- Euphoria is getting text messages, calls or social media response that creates a feeling of being valued or loved (Bolle, 2014). This drives an individual to use a device more.
- Cognitive salience is when the particular activity becomes the most important activity in the person's life and dominates their thinking (Griffiths, 2005). In the context of this study, the obsession with smartphone use disrupts the more important things in life such as work and education. In other words, the smartphone becomes the dominant feature of an individual's thoughts or focus of attention (Thornton et al.,cited in Hadlington, 2017).
- Behavioural salience is where there is a constant need to check the smartphone for messages and alerts and this is the primary symptom of behavioural addiction (Thornton et al., 2014 cited in Hadlington, 2017).
- Withdrawal symptoms is conceptualised as the generalized feelings of anxiety or intolerence due to being prevented from using the smartphone or being interupted whilst using the device (Hadlington, 2017).
- Tolerence refers to the process whereby increasing amounts of the particular activity are required to achieve the former effects (Griffiths, 2005). In the case of the smartphone use, the user acknowledging that

he has an issue with excessive smartphone use and making an attempt to curb it, but the end result is a failure to do so.

- Conflict refers to disputes between the smartphone addict and those around them (interpersonal conflict) or from within the individual themselves (intrapsychic conflict) which are concerned with the smartphone activity (Griffiths, 2005).
- Relapse refers to the tendency for repeated reversions to earlier patterns of the particular activity to recur and for even the most extreme patterns typical of the height of the addiction to be quickly restored after many years of abstinence or control. The classic example of relapse behaviour is in smokers who often give up for a period of time only to return to full-time smoking after a few cigarettes (Griffiths, 2005). However, such relapses are common in all addictions including behavioural addictions such as the smartphone.

The above 7 criteria can be used to measure the level of smartphone addiction of a person and it adds perception to the study of smartphone addiction.

2.6 Risks associated with smartphone addiction

Smartphone addiction is a recent concern that has resulted from the dramatic increase in worldwide smartphone use and these devices are constantly being improved by expanding upon their functionality which in turn increases the likelihood of overuse and addiction (Choi, et al., 2015). Therefore, with the addiction to the smartphone there are a handful of risks associated with that addiction as shown below:

Multitasking

The term multitasking refers to the ability of doing several activities at the same time interval (Kirschner & Karpinski, 2010). University students and their smartphones have become inseparable even in learning contexts (Judd, 2014). Whether learning in class, studying outside class or engaging in homework either alone or as a member of a team, most students tend to smartphone multitask (Jacobsen & Forste, 2011). Basically, students could perform different types of actions whilst using their smartphones which includes texting, instant messaging, playing games and searching information online.

Xu (2015) has stated in his study that studies have indicated that technology related distractions are negatively related to homework effort and environment although smartphones facilitate access to educational resources and collaboration (Chan et al.,2015). For instance, in Junco and Cotton’s study in 2011, 93% of students reported that they actively chatted while in class. Overall, it would appear to be all of these activities are acceptable and thus do not affect the concentration of students shown toward completing their work unless they are not accompanied by academic tasks such as writing assignments which needs a high level of concentration. Furthermore, students who are regularly exposed to smartphone use may find it difficult to manage their time efficiently and thus produce low quality assignments. Therefore, it could be suggested that students who are constantly multitasking seem to decrease their academic performance shown at school and universities (Kirschner & Karpinski, 2010).

Procrastination-related problems

Procrastination is defined as the act of deliberately postponing or delaying something that needs to get done, and with our smartphone devices constantly bombarding us with news, notifications, e-mails and messages, it is easier than ever before to procrastinate (Rosenkrantz de Lasson, 2014). One of the main questions that need to be considered related to students' academic performance is the procrastination of academic tasks. In academic procrastination, affected students experience the pervasive and permanent desire to delay their academic obligations, causing them to spend over 30% of their daily activities in the engagement of procrastinatory behaviour (Pychyl, et al., 2012). Al-Harrasi & Al-Badi, (2014) state that smartphones have added great potential by enabling an increase in the use of social networking and in the number of hours spent on such sites. Studies imply that the main issue contributing to academic procrastination is the fact that students use their smartphones for social networking sites mostly as an entertainment or social network (Lampe, 2011). In other words, heavy use of smartphones for social networking sites is one of the main causes of academic procrastination.

Motivational problems

As a result of procrastination, there are increasing concerns that smartphone addiction may lead to the loss of motivation. Bartol and Martin (1998) defined motivation as the force that stimulates behaviour, provide direction to behaviour, and underlies the tendency to prevail. In other words, individuals must be sufficiently stimulated and energetic, must have a clear focus on what is to be achieved, and must be willing to commit their energy for a long period of time to realize their aim in order to achieve academic goals. Therefore, according Roberts et al. (2014), smartphone addiction may cause individuals to disengage from class activities, to cheat in exams or break off their studies, and it may affect academic performance.

Health risks

Samaha and Hawi (2016) in their study state that smartphone addiction has negative effects on mental health and well-being. Potential risks and drawbacks identified due to smartphone addiction include psychological disorders and health problems such as:

- Anxiety - People may use the smartphone to distract themselves from their worries and fears. An anxiety disorder like obsessive-compulsive disorder may also contribute to excessive SMS/MMS checking and compulsive smartphone use (Bhise, Ghatule, & Ghatule, 2014).
- Depression - The smartphone can be an escape from feelings of depression, but too much time online can make things worse. A study from North-western University revealed that the more time people spend on their phones, the more likely they are to be depressed and

furthermore, the average daily use for a depressed person was 68 minutes, compared to just 17 minutes for someone who has better mental health (Leonard, 2015). Smartphone addiction further contributes to isolation and loneliness (Bhise et al., 2014)Stress - While some people use the smartphone to relieve stress, it can have a counterproductive effect. The longer they spend online, the higher their stress levels will be. For example, Leonard (2015) states that a research from 2012 has found that the need to immediately read and respond to every of these incoming alerts is causing rising stress level.

- Physical exercise – Leonard (2015) states once an individual gets addicted to smartphone, that individual will be spending less and less time on exercising. For example, he has also stated that in one study, a survey was carried for over 300 College students about their smartphone use, leisure activity and physical activity, and 49 of the students were then asked to use a treadmill test to evaluate their heart and lung fitness. Unsurpisingly, those who spent upto 14 hours daily on their phones were less fit than participants who only averaged about 1.5 hours of use.

Collectively, the above risks due to smartphone addiction play a role in a student's educational process to various degrees and at various times.

Academic Performance (Dependent Variable) – Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments (Steinmayr et al., 2014).

2.7 Conceptual framework

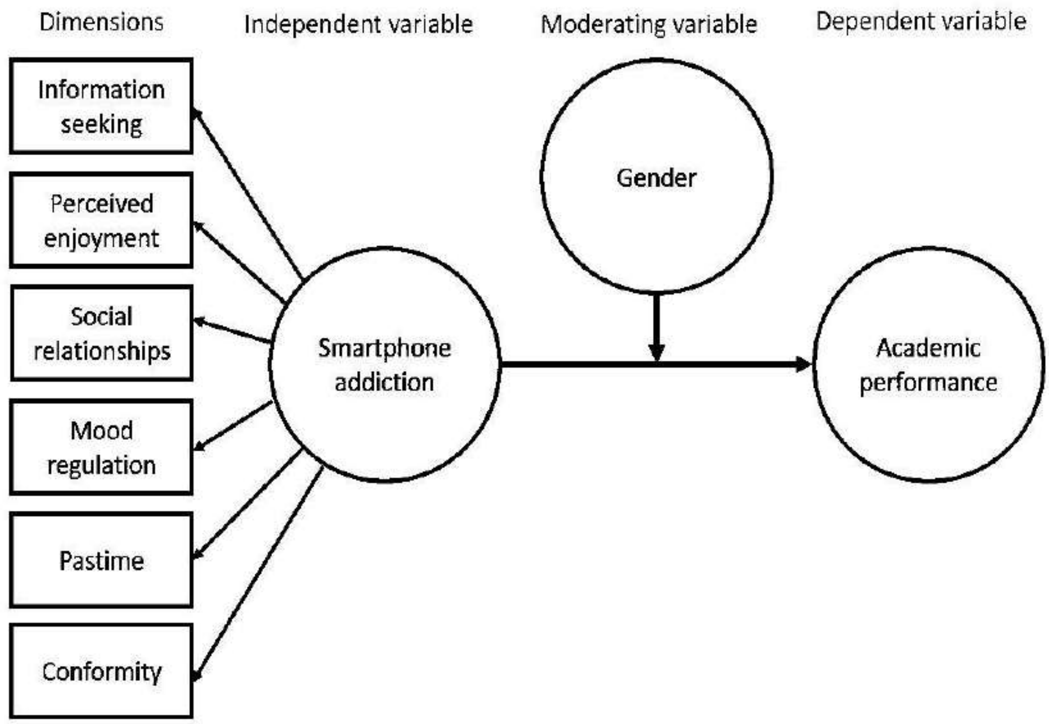


Figure 2: Conceptual Framework

The conceptual framework for this study was adapted from previous studies – mainly Zhang et al. (2014) and Hawi and Samaha (2016). The independent variable 'Smartphone Addiction' has been taken from the study carried out by Zhang et al. (2014) on 'role of motives in Smartphone Addiction' which includes six dimensions – information seeking, perceived enjoyment, social relationship, mood regulation, pastime and conformity. For this study, the researcher is expanding Zhang et al. (2014)'s study to include academic performance by Hawi andSamaha, (2016) in order to examine its impact on undergraduates in Sri Lanka. The researcher has also included the moderating variable 'gender' to the study to provide a more detailed point of view and in-depth analysis.

3. Research methodology

This study pursues a deductive reasoning method since all of the variables and dimensions have been developed based on existing literature and used to formulate a set of hypotheses, and finally the researcher attempts to explain the impact of smartphone addiction on academic performance of undergraduates in Sri Lanka.

A total of 400 undergraduates from four state and four private universities who use a smartphone in the Western Province of Sri Lanka were taken as the sample of this research.

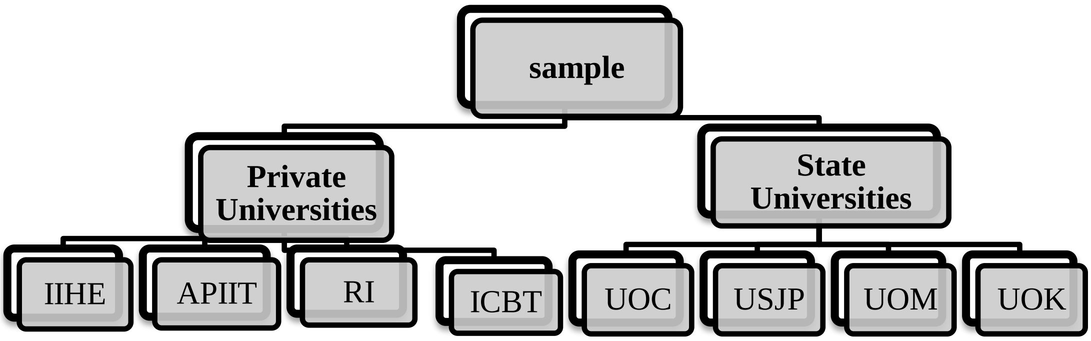


Figure 3: Sample

3.1 Data collection

Information is collected using a structured questionnaire and measured the impact of smartphone addiction on academic performance of undergraduates. Questionnaires were distributed among the sample. Moreover, to collect the data convenience sampling method was used because it is the best non-probability sampling method which can be used in this context. However, there is a probability of the population being non-represented which can affect the quality of data being gathered, nevertheless this was the best alternative in the given context.

Secondary information sources such as newspaper articles, books, research papers, web sites, and journals have been used to gather secondary data. Data analysis was done by using SPSS and conducting independent sample t-test, Pearson's Correlation and Hierarchical Regression Analysis. Preliminary analysis was carried to determine respondents who are addicted and not addicted to their smartphones. Thereafter, the respondents identified as addicted to their smartphones were used in the pilot study and the main study to assess the validity and reliability of measurement properties.

4. Data analysis and findings

4.1 Criteria used to identify addictive and non-addictive smartphone users

Since many people are hesitant to say that they are addicted to their smartphones or may not be able to correctly identify their addiction, two criteria were used to identify the addictive and non-addictive nature of smartphone users. The questionnaire did not identify the two criteria as contributors to smartphone addiction to eliminate any bias of responses.

- Criteria 1 - Based on usage (Hours) – According to Back & Body Medical, and. it was identified that if an individual users his smartphone for more than 7 hours is considered addicted.

- Criteria 2 - Based on obsession - According to Bhise et al. (2014) addiction is defined as an obsession with something that disrupts the more important things in life such as personal relationships, education or jobs.

Table 2: Addictive and non-addictive smartphone users

Addictive	**203**	**Non-Addictive**	**197**

Based on the criteria mentioned above it was identified 50.7% are addicted to their smartphones out of the sample size of 400.
Sample profile – Pie and bar charts were used to explain the age, gender, name of university, and year of degree programme of the sample.
Normality test – for the normality test mean, median, mode, skewness and kurtosis were used to understand the respondents distribution.
Reliability and validity test of the main study – AVE, CR, KMO and Bartlett test of Sphericity were used to validate the questionnaire and Cronbach alpha was used to measure the reliability of the variables.

Table 3: Average of marks between addictive and non-addictive respondents.

	Addictive	**Non-Addictive**
Average of Marks (60 & Above)	**79.2%**	**52%**

The researcher has compared the average of marks between addictive and non-addictive smartphone users. According to the table it can be identified the average of marks of Non-Addictive users are higher than that of the Addictive smartphone users.

4.2 Hypothesis testing

To examine the significant difference in academic performance between undergraduates who are addicted and not addicted to their smartphone

Table 4: difference in academic performance between undergraduates who are addicted and not addicted to their smartphone

	Addictive	**Non-Addictive**
Mean Value	3.3473	3.6041
Independent Sample t- test value	-3.342	-3.336

To test this hypothesis independent sample t-test was conducted with a significance value of 0.018. The table above shows the mean values of addictive and non-addictive users and it can be observed that the academic performance of non-addictive users is better than that of addictive users.

The most salient dimension determinant of smartphone addiction

Out of the six dimension of smartphone addiction, it was identified that social relationships is the most salient determinant that influences smartphone addiction in relation to academic performance at a value of -0.364

The impact of smartphone addiction on academic performance among undergraduates in Sri Lanka

The Pearson Correlation was carried out to identify the nature of relationship between the two variables. The Pearson value of -0.239 shows that there is a negative relationship between smartphone addiction and academic performance. Regression analysis was carried out with B values of 2.248 (academic performance) and -0.308 (smartphone addiction) and a F value of 12.188 with a significance level of 0.001).

The moderating impact of gender on the relationship between smartphone addiction and academic performance

To test this hypothesis hierarchical regression was conducted to measure the moderating impact of gender on the relationship between smartphone addiction and academic performance. The significance value being at 0.056 shows that there is no moderating impact of gender on the relationship between smartphone addiction and academic performance.
Further to analyse if a particular gender's academic performance is equally impacted by smartphone addiction or not independent sample t-test was carried out. Significance value of smartphone addiction (0.072) and academic performance (0.882) based on gender is more than the acceptance level of 0.05 indicating that both the addiction level and academic performance do not differ based on gender. Thus, further supporting the results of the non-moderating impact of gender.

4.3 Comparison of academic performance based on smartphone addiction

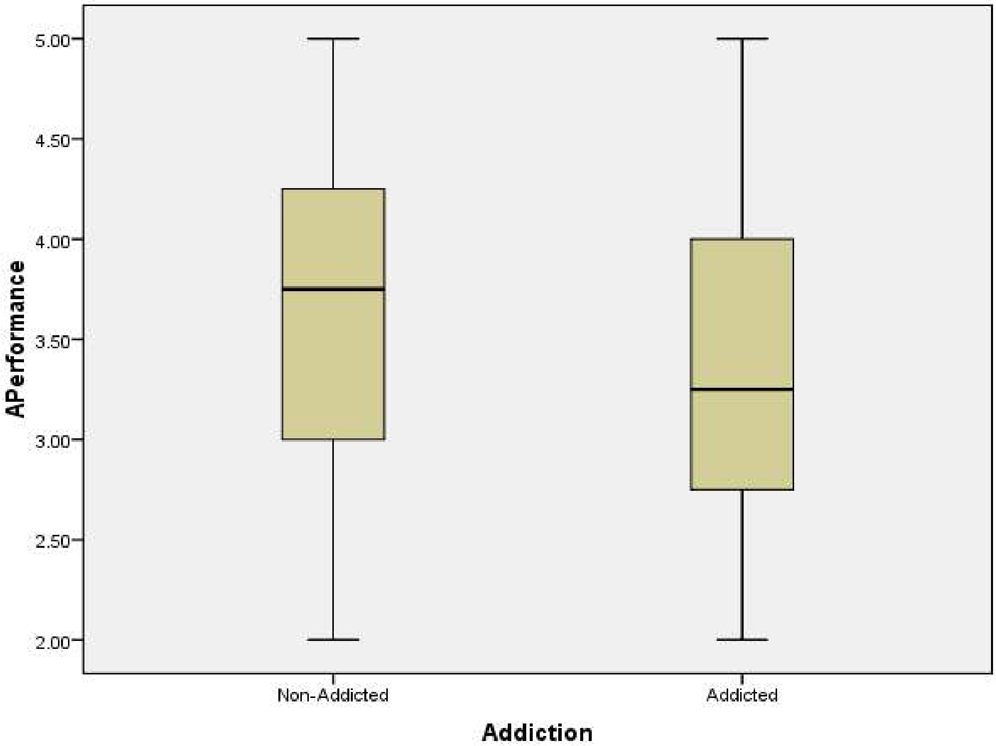
In order to get a better understanding of academic performance between Addictive and Non-Addictive smartphone users the author carried out a box plot test.

Table 5: Case summaries – academic performance of addictive and non-addictive users

Addiction	N	Mean	Median	Minimum	Maximum	Skewness	Std. Deviation
Non-Addicted	197	3.6041	3.7500	2.00	5.00	-.069	.81321
Addicted	203	3.3473	3.2500	2.00	5.00	.326	.72189
Total	400	3.4738	3.5000	2.00	5.00	.150	.77795

Source: Survey findings

As per Table 5, it can be observed that even though the mean value is similar for both addictive and non-addictive smartphone users, the skewness values shows that the non-addicted users are negatively skewed which means that many of respondents have stated agreed in their responses. While the addicted users are skewed positively which means that many of the respondents have



stated disagree in their responses.

Figure 4: Box Plot - Academic Performance of Addictive and Non-Addictive users
Source: Survey findings

According to the box plot, since the non-addicted users are negatively skewed it can be observed there is a median value of 3.75. On the other hand, the addictive users have a median value of 3.25. Therefore, it can be observed that academic performance of addicted smartphone users are below the non-addicted users.

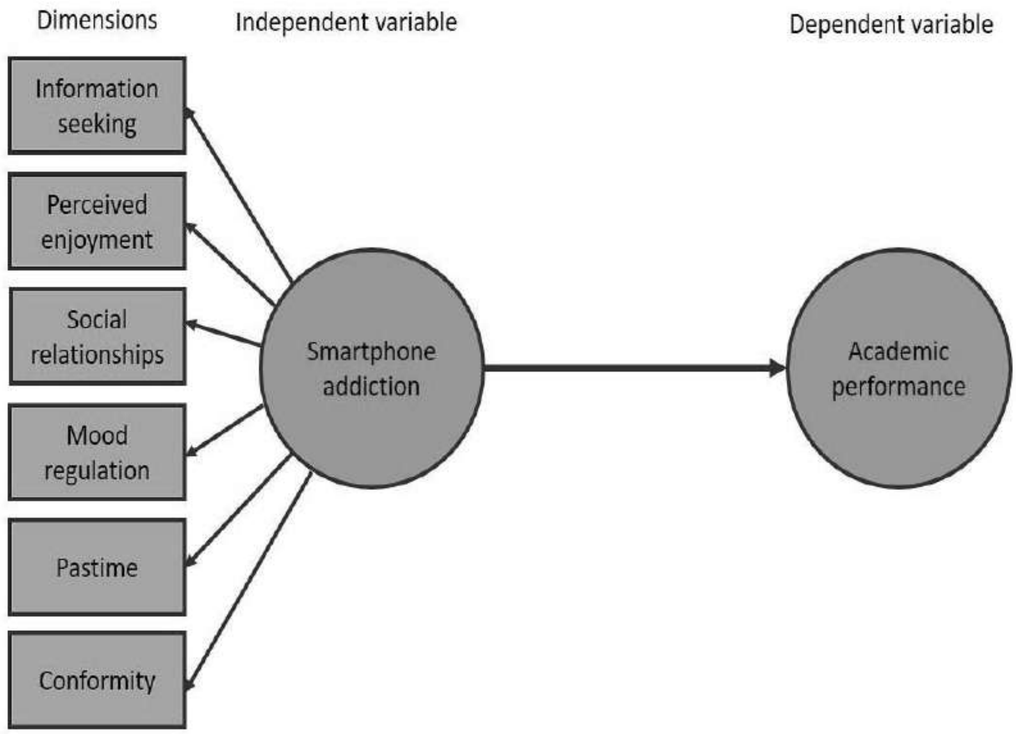


Figure 5: Re-Examination of Conceptual Framework

Upon concluding the analysis of data gathered from this study, it was found that all the dimensions of the independent variable and the dependent variable have met the required acceptance level at the significant level of 0.05 except for the moderating variable (gender).

With regards to the moderating impact of gender, the data analysis was able to provide confirmation that gender does not moderate the relationship between smartphone addiction and academic performance of undergraduates through the testing of hypothesis. The hypothesis was able to indicate a significance of 0.056, which is more than acceptance level of 0.05, this highlights that there is no moderating impact of gender on the relationship between smartphone addiction and academic performance of undergraduates. Hence, the moderating variable was removed from the conceptual framework.

5. Related findings to literature

There is a significant difference in academic performance between undergraduates who are addicted and not addicted to their smartphone. The finding was consistent with the research findings of Yang and Tung, (2007) and Rosen et al. (2013).

- Yang and Tung, (2007) p are significantly different to those of non-addicts.

- Rosen et al. (2013) found similar findings, where a study was conducted to a sample of 263 US students aged 11 to 25 years and results showed that those who used Facebook and texted while studying had lower GPAs compared with students who did not.

- The most salient determinant that influences the p of undergraduates in Sri Lanka is social relationships. This finding was consistent with the research findings of Lopez-Fernandez et al. (2013) and Kirschner and Karpinski, (2010).
- Lopez-Fernandez et. al., (2013) identified that smartphone addicts were found to spend most of their time on their phones for social purposes.
- Kirschner and Karpinski, (2010) found that students using smartphones for social purposes reported a lower GPA than non-users. In the above study the average Facebook user had a GPA of 3.0 – 3.5, while the non-user had a GPA of 3.50 – 4.00, indicating the negative relationship between social relationships and academic performance.

- The impact of smartphone addiction on academic performance among undergraduates in Sri Lanka is negative. The finding was consistent with the research findings of Acharya, Acharya, and Waghrey (2013) and Lee et al. (2015).
- Acharya et al. (2013) found negative relationship between smartphone addiction and academic performance in their study as smartphones are used for a greater part of the day and almost all students in college own a smartphone. Results showed the most common symptoms found to be headache which was followed by anger and other common mental symptoms included lack of concentration thus resulting in low academic performance.
- Lee, Cho, Kim, and Noh (2015) found that 'higher the addiction level, lower is the level of self-regulated learning that undergraduates have'. Moreover, in an interview of Lee et al. (2015) conducted for the smartphone addiction group, it was identified that students who are addicted to their smartphones do not have enough control over their smartphone learning plan and thus the smartphone addict learners are constantly distracted by other applications on their devices while they are studying. This has led to decrease in their academic performance.

There moderating impact of gender on the relationship between smartphone addiction and academic performance in Sri Lanka. The finding was contradictory with the findings of Hawi and Samaha (2016) and Lepp et al. (2015)
Hawi and Samaha (2016) found, male and female undergraduates are equally addicted to their smartphones and it was identified that female students have outperformed male students in academic performance.

- Lepp et al. (2015) found that females are more addicted and spend more time using these devices than males. However, academic results revealed that females had a significant GPA than males.

6. Findings and recommendations

6.1 Findings

Based on the objectives of the study, four hypotheses were developed by the researcher and each hypothesis was tested with relevant statistical tools (Independent Sample T-test, Pearson Correlation, Regression Analysis and Hierarchical Regression Analysis). Accordingly, the three hypotheses were accepted and one was rejected.

The first hypothesis tested proved that there was a significant difference between the academic performance of undergraduate students who were addicted and not addicted to their smartphones; thus, achieving the first objective of this study. Furthermore, the mean values of the test also indicated that the academic performance of non-addicted users were better than that of addicted users.

Second objective was achieved by testing the second hypothesis and out of the six determinants of smartphone addiction it was identified that social relationships is the most salient determinant that influences smartphone addiction in relation to academic performance of undergraduates.

Third objective was to assess the impact of smartphone addiction on academic performance among undergraduates in Sri Lanka. This was achieved by testing only one hypothesis and it was identified that smartphone addiction has a negative impact on academic performance of undergraduates.

The fourth and final objective of this study was to identify the moderating impact of gender on the relationship between smartphone addiction and academic performance in Sri Lanka. This was achieved by testing the fourth hypotheses that suggested that the moderating impact of gender did not exist in the relationship.

6.2 Recommendations

Recommendations will be made focusing on three different groups – universities/institutes, students and parents.

Recommendations for universities / institutes

A strict no-phone policy during lectures – A strict compliance procedures need to be put in place at universities/institutes in Sri Lanka to ensure the proper use of smartphones in the classroom and it should be ensured that these rules are followed consistently. Therefore, each lecturer needs to place reminders of the policy on the classroom walls and in their lesson-framing pep talks. Moreover, the students should clearly be made aware of the repercussions of violating the policy.

Seminars for students - Seminars can be held for students in order to make them aware of the negative results of smartphone addiction.

Universities/institutes can invite experts and others who have recovered from their smartphone addiction to conduct seminars to inform undergraduates regarding the risks of smartphone addiction on their health, friendships and academic achievement, using effective educational guidance, which they can convince the students to follow. Therefore, these seminars will help students understand the consequences of their extensive usage of the smartphone on academic performance and as well as their personal life.

Block Social Media Websites at Universities - universities and institutes in Sri Lanka can take precautionary actions to block social media websites such as Facebook, YouTube, and Twitter etc. which will lead to less distractions for students in their learning. Additionally, universities and institutes can partner with telecommunications providers (for example, Dialog and Mobitel) to block social media websites accessed via mobile data with the help of location-based services to restrict access within university premises. Therefore, universities/institutes can block social media in an attempt to improve students' learning.

Conducting interactive lectures - Traditional methods make the students lose interest as they are one-way in nature and thus they divert their attention to their smartphones. Therefore, universities/institutions have to take the initiative to educate their panel of lecturers through workshops and seminars to incorporate interactive learning processes in their lecturing style, which in turn will make it interesting for the students to learn, engage them throughout the class, and help them focus in class without being distracted by their smartphones.

Recommendations for students

Limiting Smartphone Usage - These results should help students understand the consequences of their extensive usage of smartphones and thus students can limit their smartphone usage and only use these devices when it is necessary. Students can make their own rules concerning smartphone usage and increase self-discipline. For examples:

- Setting time periods during which the students shouldn't use their phones. (i.e. not using smartphones after 9 p.m.)
- Communicating and socialising with others through face to face conversations rather than through smartphones.
- Restricting the use of smartphones in certain situations. For example, it is advisable to keep Smartphones away during lectures, library, doing homework etc. where the student will be more focused and thus enhance their learning.

Increase involvement in physical recreational and social activities - Recreational activities will give the opportunity for the students to be creative, express their basic needs which will help them to correctly balance study and play, thus making them more productive and be better physically, mentally, socially and emotionally. Furthermore, Students can involve themselves in physical social activities such as hanging out with friends and family and also by participating in Rotaract club, Interact club etc. thus these physical activities will also enable students to socialise with others and stay updated with social trends rather than through their smartphones. Therefore, involvement in recreational and social activities will help students satisfy their desire for social relationships and develop a healthy mind-set which will help them focus better on their academic performance.

Embrace the technology to control smartphone usage and repurpose the smartphone as a learning tool - It is advisable for Students to remove or block unnecessary social media apps. Students can take help from apps that are available on Play Store to help cut down on smartphone use. The following apps will help students to reduce or control smartphone addiction;
Break Free – This allows the student to track the amount of time spending on their phones and which applications.
Focusme – This allows the students to block the sites they wish to avoid.
Furthermore, if students are unable to control their smartphone usage through apps, they can repurpose their devices by using apps such as Wunderlist and iStudiez to help themselves in their academic performance.

Recommendations for parents

In accordance with Sri Lanka's collectivist culture, children tend to stay with their parents until they have completed their higher studies. Therefore, in the Sri Lankan context, parents can influence their children to help reduce their smartphone addiction and improve academic performance.

Set healthy limits and boundaries - The current research shows that undergraduates who are addicted to their smartphones use these devices for all six determinants of Smartphone Addiction and all these have a negative effect on academic performance. Therefore, parents can limit the smartphone usage for students at home during study times so the above mentioned determinants of smartphone addiction should not distract the attention of students from primary tasks as education comes first.

Another solution for smartphone addiction is setting a limit on the internet data available to their children. The allotment of data can be done through limiting the data available through

Wi-Fi and also by setting the limit on the money allotted for their phone bills. Once the allotment runs out, the internet will be disconnected. Therefore, students will use their smartphones less frequently and more thoughtfully.

Applications to control Smartphone use and repurpose the smartphone as a learning tool – there are number of applications which helps the parents to keep tabs on their children's smartphone usage. Given below are few apps that can be used by parents.

- Ourpact – this app allows parents to control the screen time of certain apps and shutdown apps during certain hours such as school, university and study time.

- Onwards – an addiction management app designed to equip both adults and children with the tools to overcome their compulsive habits and break user's bad habits.

Furthermore, parents can encourage their children to use educational applications such as Google play books, Coursera etc. which will help the students to use their smartphones for educational purposes. Thus, increasing the usage of educational apps may change the smartphone addiction impact in a way that improves a student's academic performance.

7. Conclusion

The main objective of this research was to study the impact of smartphone addiction on the academic performance of undergraduates in Sri Lanka. The first hypothesis tested proved that there was a significant difference between the academic performance of undergraduate students who were addicted and not addicted to their smartphones; thus, achieving the first objective of this study. Furthermore, the mean values of the test also indicated that the academic performance of non-addicted users was better than that of addicted users.

Second objective was achieved by testing the second hypothesis and out of the six determinants of smartphone addiction it was identified that social relationships is the most salient determinant that influences smartphone addiction in relation to academic performance of undergraduates.

Third objective was to assess the impact of smartphone addiction on academic performance among undergraduates in Sri Lanka. This was achieved by testing only one hypothesis and it was identified that smartphone addiction has a negative impact on academic performance of undergraduates.

The fourth and final objective of this study was to identify the moderating impact of gender on the relationship between smartphone addiction and academic performance in Sri Lanka. This was achieved by testing the fourth hypotheses that suggested that the moderating impact of Gender did not exist in the relationship.

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Hospitality, Marketing and Tourism

Impact of green branding on brand preference: With the moderating effect of customer perceived value

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Abstract

Environment plays a significant role in the lives of humanity. With rapid increase in consumers getting environmental conscious, numerous organizations worldwide have changed their whole business activities to be eco-productive going past ecological consistence and to increase the competitive edge over its rivals. 'Green' has been utilized to portray a great deal of brand activation methodologies namely energy efficient, organic and ecologically inviting. However, understanding the consumer behavior towards the green concept is one of the least considered areas of research in Asian countries thus far. Hence, this study is carried out with the purpose of identifying how the green branding influences the customers' brand preference in purchasing eco-friendly fast moving consumer goods (FMCGs). Four (04) main variables related to green branding were considered for the study, namely, Green brand image, trust, satisfaction and awareness, while a sample of 385 FMCG consumers from the Colombo District was surveyed for the purpose of data collection. Descriptive statistics, hypotheses testing as well as hierarchical multiple regression were used in combination with various statistical tools, such as correlations, independent sample t-test and one way ANOVA, in order to analyze and interpret the results. The study has empirically proven that there are positive relationships between brand preference and each independent variable, while customer perceived value significantly moderating the relationship between green branding and consumers' brand preference. Moreover, demographic factors, such as gender, age and income have both significant and insignificant relationships with the influencing variables. In this regard, creating more awareness, introducing green improvements, developing emotional links with consumers, and focusing on a layered strategy in branding are some of the recommendations made in the research. Based on the results, the study provides important insights to the FMCG players, thereby contributing to improve and encourage green concept in Sri Lanka. Further, customers who are attracted to buy green products are also benefited by the derived results, through which they are able to make more informed purchasing decisions. Equally, FMCG Companies can draw on the findings of the study in formulating more effective green branding, marketing and development strategies, and thereby enhance their performance in future.

Keywords: Brand Preference; Consumer Perceived Value; FMCG Sector; Green Branding; Sri Lanka

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1. Introduction

Lot of companies worldwide are adapting a green marketing strategy for many reasons such as, securing themselves against regulations that may be applied, responding to green consumer demands and to compete with other green offerings (Grant, 2008) or changing their whole business philosophy (Polonsky & Rosenberger, 2001). 'Green' has also been used as a symbol that represents a lot of brand positioning strategies such as organic, energy efficient and environmentally friendly (Parker et al., 2009).

Growing concerns of the organizations as well as the customers regarding the green concept are clearly visible in the Sri Lankan context, where there are increasing number of studies / articles been published, while having frequent and ongoing discussions about the possible improvements on the same. Sri Lanka has tremendous potential to be recognized as a hub for green industry and a model for sustainability (Opines, 2018). More and more Sri Lankan companies are taking grasp of the dire need to integrate sustainability and environmental consciousness in their day to day operations (Earth Day-Recognising Sri Lankan Green Companies, 2017).
At the same time, brand preference is important for diffusion of innovation in any context as it provides a lot of benefits such as having strong competitive power and unique position in the market (Ballester & Aleman, 2005). This is also valid for green innovation in terms of consumer goods, industrial goods and services (Polonsky, 1994; Ottman, 1998).With the intense competition prevailing in the FMCG sector in Sri Lanka, it becomes essential for an organization to provide better customer services, spread more awareness and emphasis on need based innovative products at reasonable prices when promoting the green attributes and positioning their respective brands.

In general, green attributes are positively related with brand preference of the consumers and brand credibility (brand trust, brand expertise and brand attractiveness (Grover, 2014). In fact, green branding, brand heritage and corporate values enable organizations to gain consumers' trust and achieve market differentiation (Patrick et al., 2005; Raska & Shaw, 2012; Rios et al., 2006). Despite the environmental concern and positive attitude of customers towards sustainability and green products, some studies reveal that the market share of green products remain confined (Fernando and Samarasinghe, 2014), thus consumers' 'environmental attitudes' do not always lead to actual purchase behavior (Fernando & Samarasinghe, 2014, Carrington et al., 2010, Kilbourne and Beckmann, 2002). Therefore it is an important research issue to integrate the perspectives of both green and brand from consumer perspectives. There is a lack of research examining the effects of consumer perceptions of green branding strategies towards green behaviour (Cronin et al., 2010).The majority research works on environmental issues are from the USA and Western Europe, thus these researchers are unclear if the findings could transferable to other countries (Chen , 2008). Available literature in Sri Lanka have tested the relationship between green attributes of businesses in general on customer loyalty, customer value proposition and customers purchase intention (Fernando & Samarasinghe, 2014; Kodituwakku &

Kanagasabai, 2013), but hardly any evidence available, testing the impact of green branding on the brand preference.

However, empirical evidence prove that a positive relationship exist between consumers' perception of the brand and brand preference, emphasizing the fact that results can be differ from one industry to another as well as based on the tangibility of the product thus the framework could be tested in other countries in order to be able to generalize the results (Gunasti & Ross, 2010; Mourad & Ahmed, 2012).

Further, many scholars have argued that brands gain increased value when communicating their sustainability efforts to various stakeholders, provided they perceive positive values (social, emotional and quality) about the offering (Kumar & Christodoulopoulou, 2014; Hitchcock & Willard, 2015). In view of all the arguments, this research focuses on analyzing the relationship between green branding and the brand preference among the consumers of the FMCG sector in Sri Lanka, with the moderating effect of customer perceived values. Therefore, the research problem addressed here is; what are the factors influencing the brand preference of the FMCG consumers and how the perceived value of consumers affects the relationship between green branding and brand preference? While analyzing the main research problem, the study will answer the research questions; (a) what is the impact of green branding on brand preference of the consumers of FMCG sector in Sri Lanka, (b) How the perceived values of customers affect the relationship between green branding and brand preference and (c) how the green branding dimensions get affected from the demographic factors of the FMCG consumers in Sri Lanka?

Adoption of Go-Green is one of the patterns on the rise in current business context. Utilizing green traits in their routine activities are considered as a regulation by some of the developed nations across the globe, while the same has observed to be given very little prominence in the developing nations likes Sri Lanka. It is seen that numerous organizations these days are utilizing green strategies, for example, green products, green publicizing, green branding and eco-friendly processes and eco-labeling etc., to emphasis their ecologically agreeable activities. However, the existing findings do not provide adequate proof in this regards, in order to create solid consumer relationships with the clients who prefer green brands.

In view of the arguments made by numerous scholars, there is considerable interest for logical research that can decide the importance and potential productivity of green marking activities. Thus, this exploration will attempt to bridge the existing gap in green marketing by specifically focusing on one aspect of the same, which is green branding and how it impacts towards the client's brand preference. The objectives of the research are; (a) to analyze the impact of green branding on the brand preference of the consumers of FMCG sector in Sri Lanka, (b) to determine how the perceived values of customers affect the relationship between green branding and brand preference and (c) to analyze whether the green branding dimensions are affected from the demographic factors related to the FMCG consumers in Sri Lanka.

2. Literature review

The term ‘green’ (also environmental, environmentally friendly, eco-friendly and nature friendly) refers to products, services, laws, guidelines and policies considered to inflict minimal or no harm on the environment (Kawitkar, 2013). In addition, International Tourism Partnership (2013) states that ‘green’ involves more than environmental issues and relates to all aspects of sustainability and corporate social responsibility.

Studies suggest that green marketing activities should be carried out by the organizations to investigate the behaviors and attitudes of green consumers, identify the green markets and apply market segmentation according to the consumers’ needs and develop their positioning strategy and green marketing mix (Jain & Kaur, 2006).

Consumers have become more careful about environment preservation nowadays, hence most of the companies use green marketing as an effective tool to attract consumer and change their purchase behavior. As explained by Sammer and Wustenhagen (2006), green products and eco-branding provides information about the quality of green product, leading to create a loyal customer base. Similar results have been obtained from the Sri Lankan context by Fernando et al., (2014), revealing a positive relationship between brand loyalty and green products, eco branding and green price separately.

Green branding is identified as one dimension of green marketing, which has been defined in numerous ways. Yazdanifard and Mercy (2011) in their study refer to green brands as those that consumers associate with environmental conservation and sustainable business practices.
Chen (2009) has developed a theoretical framework which shows that the green brand equity can be enhanced by green brand image, green satisfaction and green trust. He emphasized the fact that the three elements could be vary according to the consumers’ demographics such as their income and educational level, age and gender. Later, ‘Green awareness’ variable has been added to Chen’s (2009) from Keller’s (1993) model due to the difference between the cultures, where Chen (2009) has applied his model in Taiwan in which the consumers were apparently aware of the ‘green’ concept which affects their purchase behavior. But the awareness level in Egypt, where Keller (1993) has tested his model, is quite variable among consumers and found to be getting affected by the consumer demographics.

Mourad (2012) in his study found that there is a solid connection and a beneficial outcome of the green brand image, green awareness and green trust on green brand preference. However green brand satisfaction is happened to be poorly related with the green brand preference among the consumers in the telecommunication industry.

Numerous organizations and clients are starting to understand that they are individuals from the more extensive network and should contribute to the environmental preservation in a dependable manner. This converts into firms trusting that they should accomplish adoption of eco-friendly practices just as focusing on profits. Although environmental issues increasingly influence every aspect of human life as well as business strategies, still there are very few studies that discuss green issues in the Sri Lankan market context (Samarasinghe & Ahsan, 2014).

The FMCG sector of the country is concerned about the green marketing issues and most of FMCG marketing companies have incorporated green elements into their marketing mixes as a competitive tool (Samarasinghe & Samarasinghe, 2013). For instance, FMCG marketing companies in Sri Lanka use environment friendly and recyclable packaging and modify the products to minimize or prevent the environment pollution.

Another survey method based study undertaken by Wanninayake and Randiwela (2008) investigated the consumer attitudes and perceptions towards eco-friendly products in FMCG sector and their willingness to pay for green products. Their study revealed that the Sri Lankan consumers have a substantial awareness of green products and they are willing to pay more for green products.

Green consumers share common values in their concern for the state of the environment and their awareness of the effect of over-consumption on the rate of environmental devastation. These values are reflected in an increased emphasis on the eco-costs of a product, which include its collective social and long term economic impacts. An explorative study conducted by Kinnear and Taylor (1974) found that the level of ecological concern among buyers of laundry products had an obvious effect on their brand perception. The results of the study by Patrick et al. (2005) indicates that perceived values of consumers has positive influence on attitudes towards the particular brand.

3. Methodology

This research is quantitative in nature, which falls into positivistic paradigm since it produces quantitative data using a large sample due to the large size of the population under study, and is concerned with testing hypotheses in its application. It employs deductive approach in order to propose solutions for green branding efforts in the FMCG sector. The study aims at analyzing the relationship between green branding and brand preference of the FMCG consumers at the time of buying the green products, while considering the moderating effect of the customer perceived values.

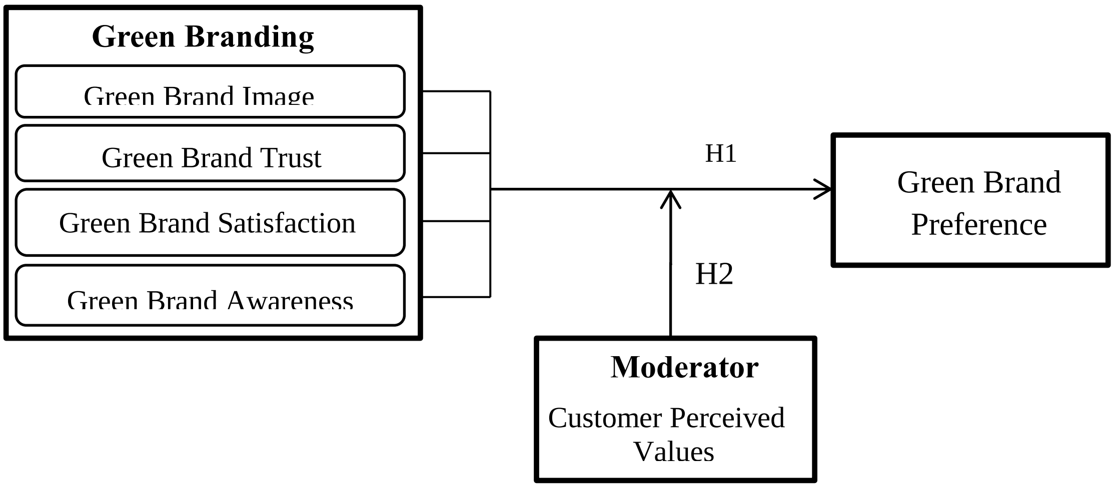

Figure 1: Conceptual Framework

3.1 Hypotheses of the study

H1: Green Branding has a significant positive relationship on Brand Preference.

> $H1_A$: Green Brand Image has a significant positive relationship on Brand Preference.
> $H1_B$: Green Brand Trust has a significant positive relationship on Brand Preference.
> $H1_C$: Green Brand Satisfaction has a significant positive relationship on Brand Preference.
> $H1_D$: Green Brand Awareness has a significant positive relationship on Brand Preference.

H2: The relationship between Green Branding and Brand preference is moderated by the customer perceived values.
H3: Gender has a significant positive relationship on Green Branding dimensions.
H4: Age has a significant positive relationship on Green Branding dimensions.
H5: Income has a significant positive relationship on Green Branding dimensions.

3.2 Data and data collection

The study will mainly employ primary data obtained from a sample of 400 FMCG consumers in the Colombo District. Data will be collected using a semi-structured and self-administered questionnaire as the instrument of data collection. Five (5) point Likert scale is applied for majority of the questions, enabling the qualitative data to be easily converted in to quantitative data.

3.3. Research plan

Population	- FMCG consumers in Sri Lanka
Target / Study Population	- FMCG consumers in Colombo District
Sampling Unit	- FMCG consumers
Sample size	- 385
Sampling Method	- Convenience sampling method

Data analysis

Statistical Package for Social Science (SPSS) 16.0 statistical software is used to analyze the data mainly in terms of descriptive statistics (mean and standard deviation) and inferential statistics (t-test and ANOVA). Raw data are been analyzed using different analytical methods, such as tables and bar charts,in order to present them more meaningfully and collectively.

Data evaluation was carried out using three different techniques, specifically:

- Descriptive and inferential analysis;
- Correlations analysis
- Hierarchical multiple regression model

Reliability study

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.920	.846	32

Source: Questionnaire

As the outcomes in table 3.2 shows, the alpha statistic is 0.920, indicating a high level of internal consistency among the questions. Basically, this means that respondents, who tend to select high scores for one item, will likely to give a similar response to the other question as well.

4. Data analysis and interpretation

4.1 Demographic profile of the respondents

Table 2: Demographic details of the respondents

Demographic Factor	Basis	Frequency	Percentage
Gender	Male	144	37.4
	Female	241	62.6
	Total	385	100
Age	18 – 30	39	10.1
	31 – 40	98	25.5
	41 - 50	101	26.2
	51 - 60	112	29.1
	61 and above	35	9.1
	Total	385	100
Monthly Income	Rs.25,000 – Rs.50,000	84	21.8
	Rs.50,001 - Rs.75,000	61	15.8
	Rs.75,001 – Rs.100,000	97	25.2
	Rs.100,001 – Rs.200,000	93	24.2
	More than Rs.200,001	50	13
	Total	385	100
Type of green products	Food and Beverages	218	56.6
	Personal care products	128	33.2
	Home care products	39	10.1
	Total	385	100

Source : Primary data

It is quite evident from the above table that the majority of the respondents (62.6%) are females and it indicates the domination of women in the FMCG sector in Colombo District. Minority, which represent by 37.4% of the sample is consist of 144 male consumers.

Out of the 400 sample drawn, 112 respondents (29.1%) fall in the age band of 51- 60 years, followed by 101 and 98 respondents classified under 41 – 50 years and 31 – 40 years age categories respectively. This motions that people tend to purchase more eco friendly products as they become older.

Results further shows that the majority of the respondents (25.2%) belong to the income group of Rs.75,000 – Rs.100,000 per month highlighting the fact that respondents require certain level of income to purchase green products.
Mainstream of the sample purchase green products in terms of food and beverages, which consists of 56.6% whereas only a marginal amount of respondents (10.1%) buy homecare products when it comes to purchasing eco friendly FMCG products.

4.2 Descriptive statistical analysis

This section examines two key descriptive statistics, specifically; mean and standard deviation of the each independent variable and its sub-elements. Outcomes are evaluated using the following decision criteria.
If, mean value is ‘x’;

$1 \leq x < 2.5 \rightarrow$ Almost disagree
$2.5 \leq x \leq 3.5 \rightarrow$ Moderate
$3.5 \leq x \leq 5 \rightarrow$ Almost agree

Descriptive statistics of the independent variables

Table 3: Descriptive statistics of the independent variables

Independent Variable	Mean	Standard Deviation
Green Brand Awareness	3.3304	0.52948
Green Brand Satisfaction	3.6265	0.59689
Green Brand Trust	3.4799	0.59573
Green Brand Image	3.6078	0.59410

Source : Primary Data

It is evident from Table 3 that green brand satisfaction has the highest mean value generating dimensions, indicating the mean as 3.6265, which can be deviate 0.59689 (standard deviation) from the mean. According to the evaluation criteria, mean value falls in between 3.5 – 5; therefore, it suggests that consumers have ‘almost agreed’ with the satisfactory indicators that are taken into consideration. It is perceived that the standard deviation is fairly higher than the other independent variables, which characterized the ability of the mean value to switch from being ‘almost agree’ category at present to ‘moderate’ level in future. This might be realistic because most of the elements that considered under the green brand satisfaction can be highly varied from one customer to another.

Second highest mean value of 3.6078 has been generated by the green brand image, with a standard deviation of 0.59410, which can also be classifies under ‘almost agree’ category in relation to the consumers’ brand preference. Dimension of green brand image entails being the most preferred benchmark, ways of handling environmental reputation, success in environmental performance and the trustworthiness about the environmental promises, in order to attain the above outcome.

The next uppermost mean value of 3.4799 is represented by the green brand trust, following a standard deviation of 0.59573. Since the mean value falls in between 2.5 – 3.5, it denotes that consumers are ‘moderately agreed’ with the indicators related to the green brand trust, when purchasing green products.

The lowest mean value among the four independent variables denotes by the green brand awareness, which also has the lowest standard deviation of 3.3304 and 0.52948 respectively. Even though it is the lowest, it still belongs to the ‘moderately agreed’ category, indicating the fact that consumers are somewhat aware of the eco friendly FMCG products available in the market.

Descriptive statistics for influencing elements under green brand awareness:

Table 4 : Descriptive statistics for green brand awareness indicators

Elements	Mean	Standard Deviation
Awareness of efforts	2.9662	1.1022
Visibility of the labels	3.6441	0.8603
Recognition of symbols and slogans	3.3324	0.8027
Ability to recall	2.8623	0.7564
Noticeability	3.8467	0.5862

Source : Primary Data

Based on the mean values presented in the above table, visibility of environmental labels and noticeability of the brands can be identified as the dominant influencing elements, which have been categorized under green brand awareness. Since both the mean values belong to the range of 3.5 to 5, it is evident that most of the customers have ‘almost agreed’ that they purchase the FMCG products by following the visibility and noticeability of the green brands. On the same hand, it proves that the above two (02) dominant factors have a greater influence over the brand preference of the consumers rather than various other awareness activities carried out by the companies.

However, it is important to note that the standard deviation of visibility of labels, which is 0.8603, is higher than the noticeability of the brands, indicating that the former has better ability to spread towards a larger area than the other awareness indicators.

Next highest mean values are symbolized by recognition of symbols and slogans and the awareness of efforts by the customers, which are 3.3324 and 2.9662 respectively. It indicates that various kind of advertising strategies and the creative brand reflection of the products have a lesser influence so far than the previous elements, on the consumers’ preference, and are classified under the ‘moderately agreed’ category by the respondents.
Ability to recall the different green brands have a minimum impact, pointed out by the mean value of 2.8623, which also falls between 2.5 – 3.3 category in the evaluation criteria. This indicates that majority of the sample ‘moderately agree’ to the fact that they can recall their preferred green brands, when purchasing FMCG products.

Descriptive statistics for influencing elements under green brand image

Table 5 : Descriptive Statistics for Green Brand Image

Elements	Mean	Standard Deviation
Benchmark in environmental commitments	3.6961	0.8469
Environmental reputation	3.6415	0.7714
Success in environmental performance	3.5610	0.7267
Stability in environmental concerns	3.4103	0.7201
Trustworthiness on environmental promises.	3.7298	0.9098

Source : Primary Data

Based on Table 5,trustworthiness on environmental promises has recorded the highest mean value, which is closely followed by the brand being the best benchmark in environmental commitments and the means of handling environmental reputation correspondingly; while the success in environmental performance generating an almost equivalent mean to the later two. Further, it is observed that the respondents pay a momentous level of consideration towards the indicators of green brand image, since all the mean values are greater than 3.5 and thereby fall under the ‘almost agreed’ category. However, standard deviation of the trustworthiness on environmental promises is relatively higher than the other elements, indicating the ability to move from being in the ‘almost agreed’ to ‘moderately agreed’ level in the evaluation criteria.
On the other hand, stability in environmental concerns indicates the lowest mean among the five elements, still showing a ‘moderate’ level of concern when purchasing green products.

Descriptive statistics for influencing elements under green brand satisfaction

Table 6 : Descriptive statistics for green brand satisfaction

Elements	Mean	Standard Deviation
Ability of keeping promises	3.5766	0.7772
Happiness about the decision	3.6831	0.7660
Idea of being the right decision	3.8129	0.8205
Satisfaction about the product performance	3.4337	0.7544
Gladness of being a customer	3.6259	0.7146

Source : Primary Data

In accordance with the table 6; respondents’ idea of their choice being the right decision gain the priority over the other elements, by recording the highest mean of 3.8129, which is well placed within the ‘almost agreed’ level effect on the brand preference, since the mean value belong to the range between 3.5 - 5. Similarly, all the other elements except for the satisfaction about the product performance have also generated equivalent means leading to be classified under the ‘almost agreed’ category. However, standard deviations of these indicators are fairly high,indicating a greater possibility of the responses to be reversed.

Descriptive statistics for influencing elements under green brand trust

Table 7 : Descriptive statistics for green brand trust

Elements	Mean	Standard Deviation
Reliability	3.7948	0.6590
Dependability	3.4051	0.7651
Trustworthiness	3.1896	0.7309
Expected environmental concerns	3.5298	0.9408

Source : Primary Data

Based on Table 7,reliability of the preferred brand has obtained the highest mean value of 3.7948 with the lowest standard deviation, indicating a more stable response from the FMCG consumers. On the same hand, ability of the brands to meet the expected environmental concerns is also up to the ‘almost agreed’ level by the majority of the sample, since its mean value is greater than 3.5 criteria of the evaluation. Yet, a relatively high standard deviation by the later element emphasis the possibility of the response to be shifted from ‘almost agreed’ level towards the ‘moderately agreed’ level of impact on the consumers’ brand preference.
At the same hand, dependability as well as the trustworthiness of the environmental arguments by the preferred green brands has a lesser impact on consumers’ preference when compared with the other two elements.

Correlations analysis

Correlation analysis is used to detect the linear relationship between two (02) variables, and especially measure the strength of the association.

H_1: There is no linear association between brand preference and the green brand awareness / green brand trust / green brand satisfaction / green brand image.

H_2: There is a linear association between brand preference and the green brand awareness / green brand trust / green brand satisfaction / green brand image.

Following decision rule is applied, when analyzing the outcome.

If; P value < α value (0.05) $\longrightarrow$ Reject H_1

Table 8: Correlations

Independent Variable	P. Value	Decision	Correlation coefficient
Green Brand Awareness	0.000	Reject H_0	0.253
Green Brand Satisfaction	0.000	Reject H_0	0.261
Green Brand Trust	0.000	Reject H_0	0.179
Green Brand Image	0.000	Reject H_0	0.720

Source : Primary Data

In accordance with the above table, it is evident that all the P values are less than 0.05, in respect of the decision rule, which leads all the null hypotheses (H0) to be rejected at 5% significance value. Hence, it is concluded that there is a linear relationship between each independent variable and the preference for the brands of FMCG products.

Since it is observed that the relationships exist between the brand preference and the independent variables, correlation coefficients can be used to define the nature and the strength of the respective relationships. With reference to table 8, all the coefficient values are positive, indicating the fact that independent variables have positive relationships with the brand preference of the customers.

When considering the strength of the relationship, green brand image seems to have a 'strong positive' relationship with the brand preference of the FMCG products, since it has obtained the highest coefficient value. On the other hand, relationships between the brand preference and the remaining three independent variables seem to be weak, since the coefficient values are closer to -1, yet the relationships happen to be still positive.

Association between socio-economic factors and the independent variables

Two (02) types of parametric tests[3] are used to examine the relationships between socio-economic factors and each individual variable, since the data are assured to be normally distributed.

Independent sample t-test -Performed, when there are only two (02) categories under the socio economic factor.
E.g. Identify the relationship of the green brand awareness / green brand satisfaction / green brand trust / green brand image with reference to gender of the respondent.

One way ANOVA-Performed, when there are three (03) or more categories under the socio-economic factor.

[3] Tests, which assumes that sample data derives from a population that follows a probability distribution based on a fixed set of parameters.

E.g. Identify the relationship of the green brand awareness / green brand satisfaction / green brand trust / green brand image with reference to age and monthly income of the respondents.

Decision Rule

If; P value < α value (0.05) ⟶ Reject H_1

Association between Gender and Independent Variables (Independent sample t-test)

H_1: There is no significant relationship between gender and green brand awareness / green brand satisfaction / green brand trust / green brand image.

H_2: There is a significant relationship between gender and green brand awareness / green brand satisfaction / green brand trust / green brand image.

Table 9: Significance values between gender and independent variables

Variable	P. value	Decision
Green Brand Awareness	0.323	Accept H_0
Green Brand Satisfaction	0.358	Accept H_0
Green Brand Trust	0.067	Accept H_0
Green Brand Image	0.278	Accept H_0

Source : Primary data

With reference to above results of the t-test, P values of the each independent variable are greater than 0.05, leading to the conclusion that there is no significant relationship between gender and green brand awareness, satisfaction, image and trust, of the eco friendly FMCG brands, since all four null hypothesis are accepted under 5% significance.

Association between age and independent variables (One way ANOVA)

H_1: There is no significant relationship between Age and green brand awareness / green brand satisfaction / green brand trust / green brand image of FMCG products.
H_2: There is a significant relationship between Age and green brand awareness / green brand satisfaction / green brand trust / green brand image of FMCG products.

Table 10: Significance values between age and independent variables

Variable	P. value	Decision
Green Brand Awareness	0.390	Accept H_0
Green Brand Satisfaction	0.001	Reject H_0
Green Brand Trust	0.000	Reject H_0
Green Brand Image	0.006	Reject H_0

Source : Primary data

With reference to the above output generated from one-way ANOVA, P values of the independent variables except for green brand awareness of FMCG products are lower than 0.05, leading to reject the null hypothesis at 5% level of significance. Thus, it is evident that there is a significant relationship between age and green brand satisfaction, trust as well as green brand image, when purchasing eco-friendly FMCG products.

In contrast, green brand awareness has produced a higher P value than the decision criteria, which drives to accept the null hypothesis, emphasizing the fact that significant relationship does not exist between age and green brand awareness.

Tukey HSD test

Since it is found that there is an association between age and some independent variables, Tukey HSD test has been performed to further analyze how the brand preference vary among the different age categories.

H_0: There are no significant differences among different age categories of the respondents.

H_1: There are significant differences among different age categories of the respondents.

Table 11 : Multiple comparison between different age categories

Age Categories		Significance Values			
From	**To**	**Green Brand Awareness**	**Green Brand Image**	**Green Brand Satisfaction**	**Green Brand Trust**
18 – 30	31 - 40	0.479	0.253	0.852	0.917
	41 - 50	0.618	0.023*	0.145	0.527
	51 - 60	0.351	0.957	0.927	0.161
	61 and above	0.409	0.730	0.814	0.995
31 – 40	41 - 50	0.998	0.696	0.421	0.881
	51 - 60	0.999	0.352	0.100	0.000*
	61 and above	0.988	0.988	0.998	0.713
41 – 50	51 - 60	0.982	0.013*	0.000*	0.000*
	61 and above	0.955	0.610	0.886	0.293
51 – 60	61 and above	0.998	0.926	0.229	0.432

Source : Primary data

Above table indicates the significance values related to different age categories under study, which have also been classified based on the four independent variables. According to the results, it is notable that significant differences on brand preference exist mostly between 41 – 50 and 51 – 60 age categories in terms of green brand image, satisfaction as well as trust indicators, as marked with '*' icon.

In addition, responses of the sample who belongs to 18 – 30 age category are found to be considerably differ from the 41 – 50 category about their views on brand image of the eco friendly FMCG products, whereas a similar situation exist between 31 – 40 and 51 – 60 age categories regarding green brand trust.

Association between monthly income and independent variables (One way ANOVA):

H_1: There is no significant relationship between monthly income and green brand awareness / green brand satisfaction / green brand trust / green brand image of the FMCG products.

H_2: There is a significant relationship between monthly income and green brand awareness / green brand satisfaction / green brand trust / green brand image of the FMCG products.

Table 12: Significance values between income and other variables

Variable	P. value	Decision
Green Brand Awareness	0.019	Reject H_0
Green Brand Satisfaction	0.349	Accept H_0
Green Brand Trust	0.102	Accept H_0
Green Brand Image	0.458	Accept H_0

Source : Primary Data

In accordance with the outcome presented through the above table, it is observed that the P values of green brand satisfaction, trust and image are greater than 0.05, where the null hypotheses are to be accepted at 5% level of significance. Therefore, it is concluded that there is no significant relationship exists between monthly income and each three individual variables, whereas green brand awareness happened to be having a lower P value, tending the above conclusion to be reversed.

Tukey HSD Test

With the intention of further analyzing the differences exist among different income categories in terms of the consumers' brand preference, Tukey HSD test has been performed and the following results were generated.

H_0: There are no significant differences among different income categories of the respondents.

H_1: There are significant differences among different income categories of the respondents.

Table 13 : Multiple comparisons between different income categories

Income Categories		Significance Values			
From	To	Green Brand Awareness	Green Brand Image	Green Brand Satisfaction	Green Brand Trust
Rs. 25,000 – Rs. 50,000	Rs. 50,001 – Rs. 75,000	0.395	0.760	0.708	1.000
	Rs. 75,001 – Rs. 100,000	0.923	0.622	0.830	0.999
	Rs. 100,001 – Rs. 200,000	0.413	0.433	0.444	0.994
	More than Rs. 200,001	0.609	0.990	1.000	0.143
Rs. 50,001 – Rs. 75,000	Rs. 75,001 – Rs. 100,000	0.823	1.000	0.997	1.000
	Rs. 100,001 – Rs. 200,000	1.000	0.997	0.999	0.995
	More than Rs. 200,001	0.032*	0.974	0.737	0.190
Rs. 75,001 – Rs. 100,000	Rs. 100,001 – Rs. 200,000	0.875	0.998	0.963	0.963
	More than Rs. 200,001	0.193	0.950	0.849	0.077
Rs. 100,001 – Rs. 200,000	More than Rs. 200,001	0.028*	0.862	0.526	0.265

Source : Primary data

When consider about the income based classification, it is yet again observed that significant differences exist among the respondents who fall into Rs. 50,001 – Rs. 75,000, Rs. 100,001 – Rs. 200,000 and more than Rs. 200,001 income categories, but only regarding the green brand awareness indicators.

Hierarchical multiple regression analysis - Regression statistics

Table 14: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.878[a]	.771	.769	.22952	1.855

Source : Primary Data

According to the model summary table, multiple correlation is 0.878 which says that green brand dimensions are having strong joint association with green brand preference.

Coefficient of determination is 0.771, indicating that 77.1% of green brand preference has been explained by the multiple regression model. As the value exceeds 60%, it is concluded that the model is nicely fitted. At the mean time, Durbin-Watson test statistic is 1.855 which falls in between 1.5 – 2.5, signifying the fact that the residuals of the regression model are independent, thus the model is tend to be appropriate.

Table 15 : F – test statistic

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.482	4	16.870	320.257	.000[a]
	Residual	20.018	380	.053		
	Total	87.499	384			

Source : Primary Data

In relation to the regression ANOVA result, probability of F test statistic happened to be highly significant as the P value is 0.000, interpreting that the four independent variables (green brand awareness, green brand satisfaction, green brand trust and green brand image) jointly influence on the dependent variable (green brand preference).

Table 16 : Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.228	.102		2.231	.026		
	Green Brand Awareness	.568	.023	.630	24.482	.000	.909	1.100
	Green Brand Image	.020	.022	.025	.893	.372	.772	1.296
	Green Brand Satisfaction	-.032	.027	-.040	-1.183	.238	.527	1.898
	Green Brand Trust	.422	.025	.527	16.639	.000	.601	1.664

a. Dependent Variable: Brand Preference

Source : Primary Data

The results of the multiple regression analysis further verifies the fact that three out of four independent variables (except green brand satisfaction) have positive influences on the consumer brand preference, while the green brand awareness found to be having the highest impact which is closely followed by the green brand trust, with 0.630 and 0.527 Beta values respectively. Out of the said relationships, interaction between green brand awareness and trust with the brand preference happened to be significant since both have generated 0.000 P values.

In contrast, green brand image and satisfaction are individually insignificant as the P values are higher than 5%. Hence these two dimensions are do not influence on consumer brand preference individually, but they influence jointly.

Additionally, all the variance influencing factors (VIF) are less than 10, indicating that the four independent variables are not perfectly correlated. Therefore regression model doesn't have multi-collinearity problem and the model is appropriate.

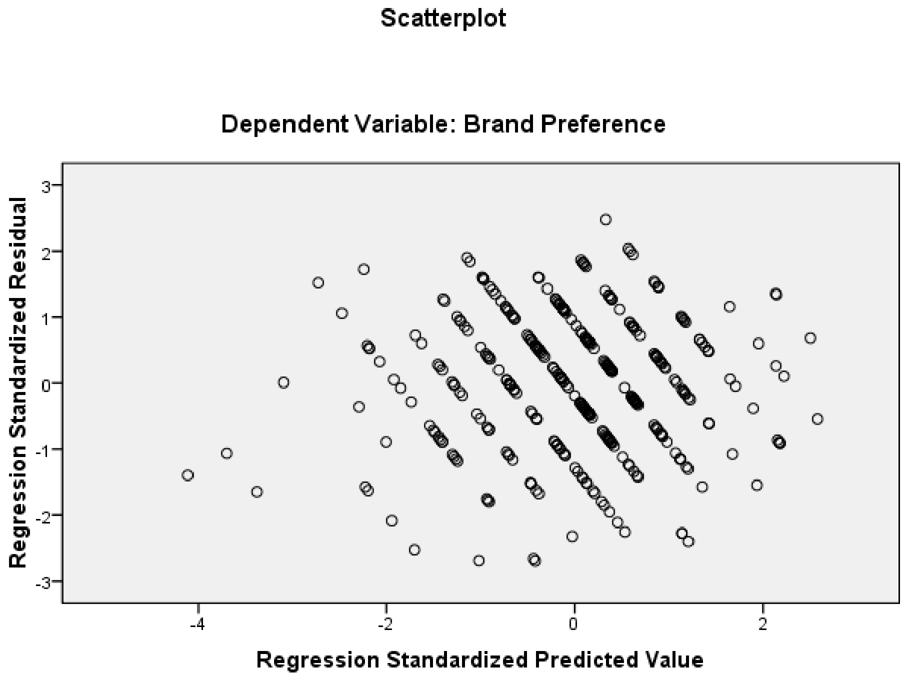

Figure 2 : Standardized Residuals
Source : Primary Data

According to the scatter plot, standardized residuals have been presented with respect to the standardized predicted values, which are randomly distributed without having any predictable pattern. This illustrates that residuals do not have funnelling shape behavior, thus variance of residuals is constant. Therefore, regression model doesn't have heteroscedasticity problem, proving the fact that model is highly valid.

Table 17 : Normality of residuals

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Standardized Residual	.041	385	.144	.991	385	.024

Source : Primary Data

Based on the normality test of residuals, probability of Kolmogorov-Smirnov test statistic is 0.144, which happened to be insignificant at 5% significant level. Therefore, residual is normally distributed with zero mean, thus the model can said to be more valid.

Moderating effect of consumer perceived value

When the moderating variable (consumer perceived values) is added to the original regression analysis, it indicates more or less the same results which can be used to generate following interpretations.

Table 18: Moderating effect

Independent Variables	**Standardized Coefficients**	**Significance**	**Effect**	**R**	**Adjusted R^2**	**F Statistic**
	Beta					
Regression		0.000	Significant	0.872	0.769	404.388
Constant	0.509	0.000	Significant			
Customer Perceived Values	-1.103	0.000	Significant			
Green Brand	1.692	0.000	Significant			
Moderator	-0.078	0.012	Significant			

Source : Primary Data

Based on the results, multiple correlation and adjusted R^2 values indicate a slight decrease, yet showing a strong joint association and model fit, even when the moderating variable is taken into consideration. F test statistic also happened to be significant at 5%, specifying that consumer perceived values as well jointly influence on brand preference along with the other independent variables. According to the standardized coefficients, it is noteworthy that the Beta value of the moderator is negative with 0.12 P value, which points out a significant moderating effect on the relationship between green branding and brand preference of the consumers in the FMCG sector.

Research Objectives and Findings

Table 19 : Summary of the findings

Research Objectives	Hypotheses	Findings
01. To analyze the impact of green branding on the brand preference of the consumers of FMCG sector in Sri Lanka.	$H1_A$: Green Brand Image has a significant positive relationship on Brand Preference	Accept
	$H1_B$: Green Brand Trust has a significant positive relationship on Brand Preference	Accept
	$H1_C$: Green Brand Satisfaction has a significant positive relationship on Brand Preference	Accept
	$H1_D$: Green Brand Awareness has a significant positive relationship on Brand Preference	Accept
02. To determine how the perceived values of customers affect the relationship between green branding and brand preference.	H2: The relationship between Green Branding and Brand preference is moderated by the customer perceived values.	Accept
03. To analyse whether the green branding dimensions are affected from the demographic factors related to the FMCG consumers in Sri Lanka.	H3: Gender has a significant positive relationship on Green Branding dimensions.	Reject
	H4: Age has a significant positive relationship on Green Branding dimensions.	Partly Accept
	H5: Income has a significant positive relationship on Green Branding dimensions.	Partly Accept

5. Suggestions, implications and conclusion

5.1 Suggestions

It is noteworthy that an increasing number of consumers are becoming environmentally conscious thus demanding more eco-friendly products for their day today consumption purposes. Hence, FMCG players should pay greater attention towards developing and implementing appropriate green branding strategies and marketing plans effectively and strategically in order to encourage positive sales of green products. In this regard, having a thorough knowledge on specific green customer segments is vital to develop the right brand positioning strategies as well as adequate marketing programmes for the same.

Green is gradually becoming a real technical business driver in today’s context (Chen, 2008; Chen et al., 2006; Grant, 2008). Thus the market players should be greatly transparent about their environmental claims, as the green brands rely so much on consumers‟ trust. They should also focus on capitalizing the ideas that tend to build green image for their respective brands through promotions, leading the consumers to achieve a satisfactory level of consumption whilst fulfilling their need to contribute towards the society.

Although the term „green‟ has become an emerging trend, use of green marketing strategies is still at a considerably low level among the FMCG players Sri Lanka. Thus it is realistic that the green awareness to become the least influenced factor in the current context. Therefore, marketers should emphasis on providing clear information and spread awareness about their green brands in order to promote consumer familiarization with the products and enhance their knowledge on the same. The focus of the communication should be to make the consumers aware about the environmental features, advantages associated with the products and its real impact on ecological preservation etc. which will in turn add value to the brand and enhance its performance.

It is further suggested to have a framework to promote and communicate their brands as ‘green’ in a way that is understandable by the consumers. Success in the communication will create an emotional link with customers that will influence their purchasing decisions, hence will be an added intangible value of their brands. Therefore, green brand preference can become a tool that differentiates the FMCG brands from its competitors in the Sri Lankan market.

It is not enough for a company to introduce green brand/s. Consumers expect the products they purchase to be cost effective and also to help reduce the environmental impact in their own lives as well. Taking these facts into consideration, it is practically possible to introduce various eco friendly product improvements such as biodegradable packaging and green advertising etc. to be in line with the customer expectations and making them more affordable and appealing to the majority of the market, while becoming responsible to consumers‟ aspirations. At the same time, it is suggested for the companies to adopt a layered strategy in branding since some of the green brands being more tailored to particular demographic groups, while others target the mass market.

5.2 Conclusion

For any kind of organization to be succeeded in the present highly competitive market environment, it is essential to understand its customer needs and fulfil the same in best possible manner. Proving the exact fact, customers are identified as the real pillar of success even in the FMCG sector, which make it a necessity for the players to keep their existing customers satisfied and retained as long as possible, while attracting new customers through need based innovative products. Incorporating the stated factors in the study in the best proportion will enable the suppliers to improve upon the awareness, image, quality and the satisfactory criteria related to their green brands, in order to attract and retain more consumers and occupy a dominant market share. Further, understanding the consumer psychology and how their purchasing decisions are influenced by these factors will be beneficial for the FMCG suppliers in forming their own branding and development strategies that will enhance their performance.

5.3 Limitations of the study

The study sample is exposed to geographical limitation, since the data is collected only from the consumers in Colombo District. Expansion of the study by covering the nationwide consumers through random sampling will be more helpful to overcome this restriction. Further, the study was not focusing on a specific product or a FMCG brand, being subjected to the fact that there is diverse range of green products available in the market. Hence it considered all the eco-friendly products related to the FMCG sector in general, when assessing the green brand dimensions. Therefore, the same framework can be used to analyze a specific product or a brand to generate more precise knowledge on green aspects.

Additionally, this study is concerned only about the relationships of selected independent variables and its sub-indicators with the dependent variable along with a single moderator, where there can be many other factors affecting the brand preference of the consumers. Therefore, having an overall understanding about the influencing factors will be more cooperative towards the further development of green branding within the FMCG sector.

5.4 Directions for future research

Considering the fact that the present study was conducted under a very limited context, covering a narrow aspect of marketing, it provides opportunity for the potential researchers to continue the study in different pathways while expanding the boundaries of green branding. Future studies can mainly tackle the reasons for the lack of awareness of the Sri Lankan consumers and study the most appropriate approaches to raise the environmental awareness in order to make it a part of the company's brand reputation. The studies can also be conducted in some other industries where the effect of the environmental responsibility is more tangible to the consumers such as automobile or transportation industry, leading the findings to be compared among different sectors to build up a more comprehensive picture. Further, the future studies can focus on market segmentation for the green consumers and study the most sensitive segment towards green branding, since the present study observed many variations among different age and income groups.

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Impact of managed services contract on service quality of telecommunication industry: A case of telecommunication industry in Sri Lanka

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Abstract

Outsourcing plays a major role in Sri Lankan telecommunication industry by targeting cost reduction and task specialization to get the competitive advantage over rivalries. Managed Services is one of the most important type of outsourcing which can be predominantly seen in telecommunication industry in the Sri Lankan context. Operation and maintenance cost of the network elements takes a huge portion of the total OPEX and there is a trend of outsourcing them to vendor companies for the benefit of the operator. On the other hand the quality of service is utmost important while looking for cost reduction as it is the attractive part of customer engagement within the business environment. But there is trade-off between cost reduction and service quality of the operation. It seems to appear some issues associated with the overall service quality of a Managed Service Contract although the cost of operations is reduced to a certain level. Therefore, it is vital to identify the critical factors which affect the service quality of Managed Service Contract in the Sri Lankan context. The authors have chosen the quantitative deductive approach and the data was gathered from 83 top and middle level managers in the telecommunication sector who are directly engaged with Managed Service Contracts through a questionnaire survey. Both SPSS and Smart PLS software packages were used to carry out the exploratory and confirmatory factors analysis for the initial data refinement and evaluating the overall model respectively. Quantitative data collected via questionnaires were analysed by using inferential techniques such as descriptive statistics and linear regression. The customer relationship and technology transfer of Managed Service Provider have been found as key factors on service quality of Managed Service Contract. Further, it was found that the relationship with the customer was the most critical factor and that there was no reward of technology transfer mechanisms. Hence, the findings of the research can be used by the stakeholders in telecommunication sector to increase the service quality of the Managed Service Contracts.

Keywords: Customer relationship; Managed Service Contract; Service Quality; Telecommunication Industry; Technology transfer

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1. Background

As of today, the competition among operators has become more competitive with the entrance of new mobile operators during the past decade within Sri Lanka with the advancement of the telecommunication industry. Currently, there are five mobile operators namely Mobitel, Dialog, Hutch, Etisalat and Airtel functioning in the Sri Lankan telecommunication industry (Telecommunication Regulatory Commission of Sri Lanka [TRCSL], 2017). Now the mobile telecommunication industry has reached its maturity stage due to the small size of the market and comparatively large number of operators compared with neighbouring Asian countries (Harpur, 2017) . As a result, existing five players in the market are contesting with each other for survival. This competition led to a price war and every operator had to reduce the tariffs to retain their market share which seriously affects their bottom line operation (Somaweera, 2010). TRCSL had to impose a price floor to end this price war in 2011. Therefore, today the cellular phone has become a commodity product and tariff rate is no longer a competitive tool. As a result, acquisition and retention of subscribers has become a huge challenge for every operator (UKessays, 2018).

Primarily, the operators should attempt to reduce the customer churn, enhance customer satisfaction and loyalty and try to attract subscribers from other operators to gain a competitive advantage (Somaweera, 2010). It is necessary to go for two main strategies namely cost leadership and differentiation to achieve a sustainable competitive advantage (Porter, 1985). Reduction of the tariff would be the only option to get the cost leadership over other operators and the differentiation of services can be fulfilled by introducing innovative aspects such as Value Added Services (VAS) to attract new and retain existing customers in the market place (BuddeComm, 2018). It would be a great opportunity to create prestige attachment between the service provider and end user and huge investment will be required for innovations and research and development activities. Hence, the increase in the sales volume and a reduction in the cost of operational activities would be more preferred to achieve this challenge (Somaweera, 2010).

UKessays (2018) stated that the telecommunication industry has been reached to its maturity stage and it cannot expect profit from the initial selling of services but from the customer existence in long run with high loyalty. As per the current chairman of SLT and Mobitel (Sirisena, 2016), Sri Lankan telecommunication industry has been overcrowded and highly competitive during the past few years alerting medium scale risk to all the telecom operators in the country. In contrast, BuddeComm (2018) states that the Sri Lankan telecommunication market is experiencing strong growth and it will grow slowly over the next five years. Lanka Business Online (2016) on the other hand states that three out of five mobile operators are still experiencing losses due to the heavy competition among each other and their initiative towards expanding mobile services will be further affected due to this matter.

Most of the industries including telecommunication all around the world tend to look for strategies to decrease the cost of their business processes and outsourcing some of them to third party organizations which have core competencies on that area (Cairns & Sliwa, 2008). Out of well-known strategies of outsourcing, Management Contract or Managed Services Contract is dominant in the telecommunication industry to reduce the operational expenses of field operations (Taga, Virag, Faggiano & Russel, 2015).

As per the interview the first author had with the Operation Manager of Bharathi Airtel, all five mobile operators are dealing with Managed Service Contracts in order to outsource some of their key functions such as their call centre, network operating centre, operation and maintenance of active and passive equipment, marketing, network implementation, transportation and logistics, infrastructure handling, Human Resource Management, etc. Mainly the Bharathi Airtel outsourced all their maintenance related to the active and passive operations through Managed Service Contract to several kinds of vendor companies in different geographical areas in 2009. As per the interview with the head of operation and maintenance, Etisalat Lanka (pvt) Ltd had awarded Managed Service Contract to Mobiserve Lanka (pvt) Ltd for their maintenance related to the both passive and active operations at the latter part of the year 2016. Dialog Business Services (Pvt) Ltd has formed a fully owned subsidiary to promote Business Process Outsourcing services like call centre operations in Sri Lanka in 2016 (Lanka Business Online, 2016).

Service quality is one of the main criteria for evaluating better Managed Service Contract and cost reduction is also to be taken in to consideration at the same time. Maintaining better quality of services at a low cost is one of the major challenges that the companies have to face nowadays (Somaweera, 2010). However, it seems that there are some issues associated with the overall service quality of Managed Service Contract – although the cost of operations is reduced up to a certain level – as there is a trade-off between two factors. Ultimately, they may not be able to get the cost advantage due to the degradation of service quality of network operation which is directly affected to a life time of network infrastructure, warranty of network elements and finally the satisfaction of end user (Interviewed Operation Manager Bharati Airtel, 2018).Therefore, it is vital to identify the critical factors which affect the service quality of Managed Service Contract in the Sri Lankan context. Based on the problem statement, the study has developed two sub questions; (a) what is the current situation of the implementation of the Managed Service Contracts and its challenges in the telecommunication industry of Sri Lanka?, and (b) what are the possible factors that affect the service quality of a Managed Service Contract in the Sri Lankan telecommunication industry?.

The authors have focussed on the objectives initially to carry out the situational analysis which describes the current trends, applications, advantages and disadvantage of implementing this concept. Then the focus was to identify the possible factors affecting the service quality of the Managed Service Contract and the impact of each factor on service quality of Managed Service Contract.

2. Literature review

There are nearly 975 fixed and 7750 mobile or cellular telephone subscriptions all around the world and most of the operators have expanded their operations globally to acquire the international market (International Telecommunication Union [ITU], 2017). Voice and Data are the two dominant categories in which all the mobile operators are focussed on and nowadays major revenue component of all the operators are based on the data services. S&P global (2017) has reported that revenue growth of global telecommunication vendors is being decreased throughout the last 6 years. Under this condition, it is necessary to minimize the operational cost to maintain a considerable profit margin while keeping the quality of service. Hence all the telecommunication companies are looking to cost effective methods of reducing operational expenses and they have selected Business Process Outsourcing (BPO) as the solution to overcome this issue (Ochola, 2013).

There are three fixed and five cellular mobile operators in Sri Lanka (TRCSL, 2017). These operators have seen a continuous growth in cellular users throughout the last three decades over fixed telephone users with increasing number of mobile operators (TRCSL, 2017). There is huge competition among mobile operators to attract new customers while keeping existing customers to increase their customer base under the condition of exponentially growing mobile customers. The entrance of a new mobile operator, diminishing investment and uncertainty associated with the industry are some reasons which enable mobile operators to reduce tariff and increase their customer base (Jayawikramarathna, 2014). Outsourcing is the practice of delegating some of their activities usually performed within the organization to an outside firm which has much more capabilities to do the same task in a cost effective manner (Cairns & Sliwa, 2008). Increasing number of competitors and expenditures associated with the telecommunication industry make the profit margin very low and create big challenge among service providers for the sustainability of the business (Economist Intelligent Unit, 2017). All the service providers have to provide better services to the customers at low cost by acquiring sufficient profit margin for the company. The largest cost component of the service providers is the operation and maintenance expenses. It includes the salary of the field operation team, transportation cost, rental of regional offices, etc. (Jethro & Gustav, 2009). The cost associated with the maintenance of the network element covers 65% to 70% of the total operational expenses. Nowadays all the operators around the world are looking for cost effective and economical way of doing business.

The company can save a huge amount of money by cutting down the cost through outsourcing human resources and pay more attention to their core competencies to get a competitive advantage (Ochola, 2013). There can be different kind of BPO models namely: staff augmentation, out-tasking, project based outsourcing and Managed Service (Subramanian & Williams, 2007). In Managed Service model, the vendor company is responsible for taking full ownership to deliver the assigned service on behalf of the client and their responsibilities include designing, executing, monitoring, controlling, formulating processes and signing off service deliveries (Subramanian &

Williams, 2007). Managed Service is a kind of service that particular organization hires a third party firm to deliver service on its behalf (Esonwune, 2010). Prasher (2015) states that the main factor of a Managed Service Contract is the quality of the services related to preventive, routing and corrective maintenance carried out by the contractor. Allen (2012) suggests some indicators such as procurement budget, stakeholder commitment, internal relationship, customer relationship can be considered as critical success factors for achieving better service quality of Managed Service Contract. Malhotra and Vashistha (2016) identifies some critical success factors which should be closely managed to ensure the successful engagement with service quality. Technology transfer, effective communication, productivity improvement, pricing and invoicing, accetance criteria, governance and reporting and clear boundaries of scope can be expressed as key factors for better service quality (Ambrose, Marshall, Fynes, & Lynch, 2008; Lin, 1997; Giannakis, 2007; Böhme, Childerhouse, Deakins, E., & Corner, 2008). By considering the key factors identified in the literature, the authors identified customer relationship and technology transfer to have a significant impact on Service quality of Managed Service Contract (Grover, Cheon, & Teng, 1996; Harryani, 2017).

3. Conceptual framework

Service quality of Managed Service Contract can be considered as the dependent variable of the study (Wallin & Viktor, 2009) and independent constructs are customer relationship (Allen, 2012) and technology transfer (Malhotra & Vashistha, 2016). Figure 1 shows the conceptual framework of the study. Five indipendent variables are included under customer relationship construct such as trust, bargaining power, commitment, transparency and communication (Damlin et al., 2012). Experience, Equipment, Information and Management capabilities can be mentioned as the independent variables under the construct of technology transfer (Lin, 1997). These were incorporated into the questionnaire of the study. The questionnaire consisted of 48 questions for evaluating the independent and dependent constructs. 5.0 Likert scale was used for selecting the answers for the questions.

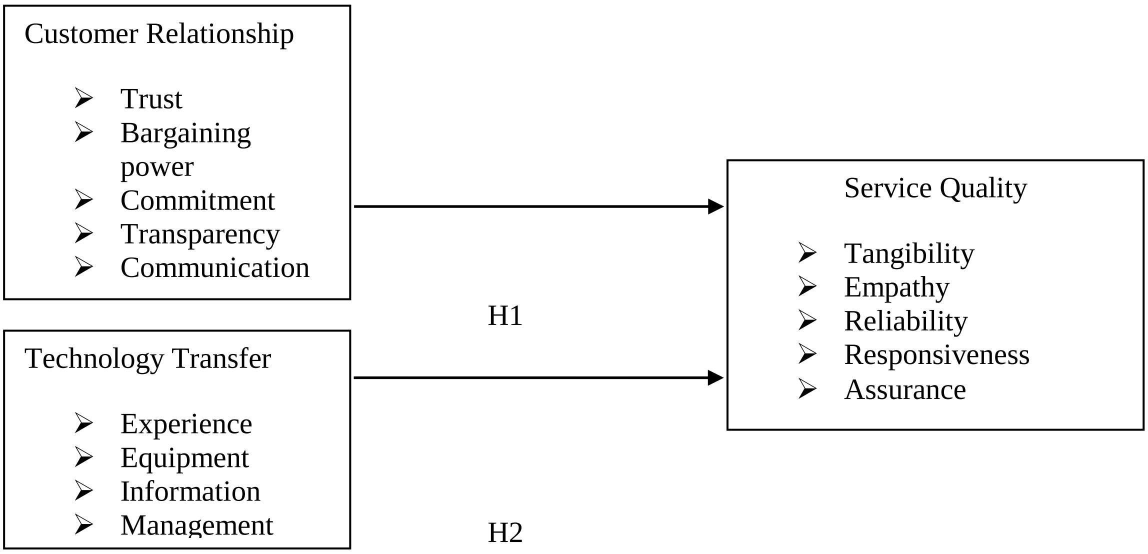

Figure 1: Conceptual framework
Source: Developed by the researchers based on the literature survey

4. Methodology, design and approach

The findings of the study are based on observable and quantifiable data as the authors have followed the positivistic research methodology. The authors have validated a set of formulated hypotheses to see whether they can be confirmed or rejected during the research process. Hence it is more related to a deductive approach. Here the authors have analysed structured data collection instruments and examined the relationships between numerically measured variables with the application of statistical techniques where the quantitative strategy is employed.

4.1 Hypotheses

Allen (2012) stated that there is a significant impact of supplier/customer relationship on quality of service. It would be a necessary factor to maintain successful customer supplier relationship, especially for service-oriented organizations to deliver better service quality. Customer relationship will lead to a sustainable competitive advantage (Butte, 2004). According to Harryani (2017), service quality is influenced by the relationship between customer and supplier. Hence, the author developed first hypothesis as below. Butte (2004) stated that the relationship between customer and supplier is utmost important for the quality of the service offered by the service-oriented organization. According to Grover et al. (1996), service quality of vendor and partnership between vendor and client are so much important for outsourcing success.

Hypothesis 1: There is a positive significant impact of Customer Relationship on Service Quality of Managed Service Contract.

Bolatan, Gozlu, Alpkan, and Zaim (2016) highlighted that there is a positive relationship between effective technology transfer and quality of service. In addition according to Brah and Lim (2006) and Verbano and Venturini (2012) found that there is a strong significant impact of effective technology transfer on service quality. Similarly, Nguyen and Aoyama (2015) evidenced that there is a significant impact of effective technology transfer on quality of service in service oriented organization. Hence, the author developed the second hypothesis as follows:

Hypothesis 2: There is a positive significant impact of Effective Technology Transfer on Service Quality of Managed Service Contract.

4.2 Research design

The entire population of the study for data collection was 105 people from the top and middle level management in aforementioned companies. When the population is small, the entire population can be considered as the sample (Lund Research Ltd, 2012). Therefore, this study considered the entire population as the sample and the questionnaire was distributed among 100 people as the remaining 05 people were un-reachable. From the 100 questionnaires sent, 83 responded to the online questionnaire and all the responses were taken into consideration for the data analysis. Considering the past data collection methods related to outsourcing in telecommunication industry, the authors also adopted a questionnaire survey for the primary data collection.

Quantitative data collected via questionnaires can be analysed by using inferential and descriptive techniques (Hsu, 2014).Hence, the authors used multiple linear regression analysis and descriptive statistic as methods for the data analysis. IBM SPSS statistic 23 was used at the beginning of the data analysis especially for the data refinement using EFA (Exploratory Factor Analysis) and later Smart PLS version 3.2.7 for evaluating the model by using CFA (Confirmatory Factor Analysis) was used as tools for the data analysis. Smart PLS software package is recommended when it contains low number of samples as well as when the data gathered is not normally distributed (Puteh & Ong, 2017). The possible factors affecting the service quality of a Managed Service Contract were identified and the impact of each factor on the service quality of a Managed Service Contract was also evaluated.

5. Data analysis and presentation

If it considers about the descriptive statistics of constructs affecting to the service quality of Managed Services, Mean and Standard deviation of each variable is listed in Table 1.

Table 1: Descriptive analysis of construct

Variable	Mean	Std. Deviation	Argument
CRPower	3.667	.71880	Towards Agree
CRTrust	3.802	.65038	Towards Agree
CRCommitment	4.062	.59887	Towards Agree
CRTransparency	3.844	.62824	Towards Agree
CRCommunication	4.029	.71336	Towards Agree

TTExperience	3.642	1.02845	Towards Agree
TTEquipment	3.451	.85734	Towards Neutral
TTInformation	3.531	.90948	Towards Agree
TTManagement	3.889	.73739	Towards Agree

Source: Developed by the researchers based on the literature survey

According to the descriptive statistics, Table 1 depicts the construct measured using Likert measurement scale, customer relationship has the highest mean (3.881) and standard deviation of 0.49388 implying that most of the responses are within 3.881±0.49388 (3.387 - 4.375 on Likert scale). Technology transfer has less mean (3.628) with standard deviation of 0.610 and within the range of 3.018 – 4.238.

Table 2: Descriptive analysis of construct

Construct	Mean	Std. Deviation	Argument
Customer Relationship	3.881	.49388	Towards agree
Technology Transfer	3.628	.61045	Towards agree

Source: Developed by the researchers based on the literature survey

According to the Table 2, commitment under customer relationship has the highest mean of 4.062 with the standard deviation of 0.59887 within the range 4.062±0.59887 (3.463 – 4.66). Equipment under technology transfer owns the lowest mean of 3.451 with the standard deviation of 0.85734 within the range of 3.451±0.85734 (2.594-4.308). Equipment has the largest standard deviation of 1.0284 over all the variables. All the variables are towards to the "Agree" on Likert scale except Equipment which is focused towards to "Neutral".

5.1 Assessments of measurement model

Structural Equation Modelling (SEM) technic is considered as most suitable for investigating causal relationship among independent and dependent constructs. It is more preferred to use smart PLS for analysis such as confirmatory factor, correlation and multi variant regression.

Table 3: Composite and convergent validity

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Assurance	0.724	0.724	0.845	0.644
Bargaining power	0.698	0.699	0.832	0.624
Commitment	0.450	0.478	0.780	0.642
Communication	0.748	0.765	0.855	0.664
Empathy	0.763	0.768	0.894	0.808
Equipment	0.741	0.748	0.885	0.794
Experience	1.000	1.000	1.000	1.000

Information	0.657	0.658	0.854	0.745
Management	0.689	0.689	0.865	0.763
Reliability	0.704	0.713	0.871	0.771
Responsiveness	0.596	0.615	0.830	0.710
Tangibility	0.750	0.753	0.857	0.667
Transparency	0.611	0.611	0.794	0.562
Trust	0.725	0.729	0.879	0.784

Source: Developed by the researchers based on the literature survey

In smart PLS, different measurement "Composite reliability" is used to evaluate the internal consistency. Composite reliability values should be 0.7 or higher. According to Table 3, All the variables have the composite reliability values which are greater than 0.7. Convergent validity of the variables can be measured by using AVE (Average Variance Extracted) figures and it should be equal or higher than 0.5 (Bagozzi & Yi, 1988). According to the Table 3, all the AVE values are higher than 0.5. Hence it fulfils the requirement of convergent validity.

5.2 Assessment of structural model

Bootstrapping option is used to check whether the path coefficients of the inner model are significant or not. In this method, a huge number of subsamples are formulated by extracting the original sample to minimize the standard error while bootstrapping. The advantage of this method is that it approximates the normality of the data set. Two-tailed t-test under the T statistics is referred to evaluate the inner model of the study which is equivalent to the p value. "P value" at a significance level of 5% is equal to the T value of 1.96 and it can be said that T value of the path coefficient is significant if it is higher than 1.96 (Wong, 2013).

Table 4: Significant values of hypotheses

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CR -> SQ	0.244	0.285	0.117	5.961	0.037
TT -> SQ	-0.169	-0.185	0.099	1.095	0.087

Source: Developed by the researchers based on the literature survey

According to Table 4, it is obvious that the P statistic of "CR→SQ" is less than 0.05 (0.037). Then the null hypothesis can be rejected and alternative hypothesis can be accepted within 95% confidence interval. Hence the path coefficient is significant for the relationship between CR and SQ and it can be said that there is a significant impact of Customer Relationship on Service Quality of Managed Service Contract.

P statistic of "TT→SQ" is greater than 0.05 (0.087). Then the null hypothesis can be accepted and the alternative hypothesis can be rejected within 95%

confidence interval. Therefore, the path coefficient is not significant for the relationship between TT and SQ and it can be confirmed that there is no any significant impact of Effective technology transfer on Service quality of Managed Service Contract.

Figure 2 shows the path coefficients, inner model and outer model for the structural model developed in smart PLS. Relevant T and P values are also mentioned. Figure 2 shows the structural model used to evaluate the hypotheses by using smart PLS.As mentioned in Figure 2, the coefficient of determination, R2, is 0.582 for the endogenous latent construct SQ-Service Quality. It implies that the two latent variables; CR-customer relationship management and TT-effective technology transfer substantially explain 58.2% of the variance in SQ.

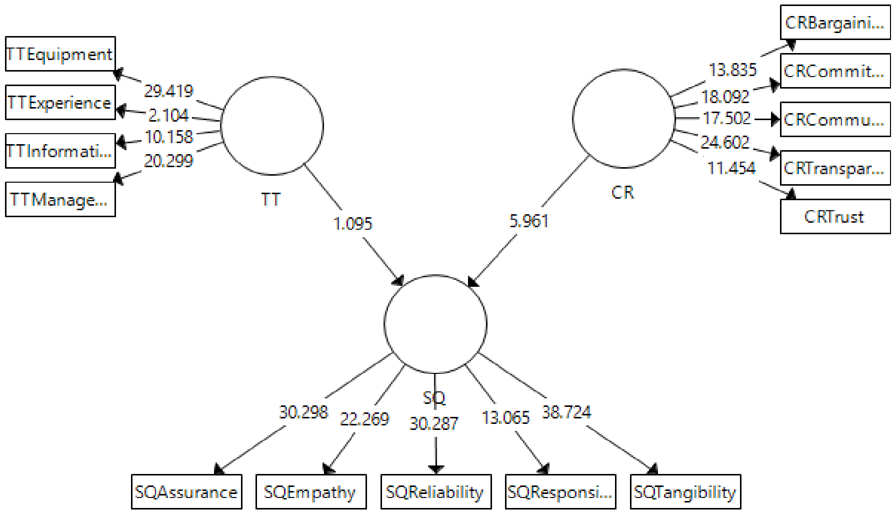

Figure 2: Hypotheses testing
Source: Smart PLS output

6. Discussion of findings

Through literature from the global context and Sri Lanka found that the telecommunication industry has reached its saturated stage due to the heavy competition among telecom operators within the oligopoly market structure. Cost reduction rather than increasing the sales volume seemed to have been chosen by almost all the operators with a focus of reducing operational expenses. Managed Service Contracts are being encouraged among operators as a strategy to achieve this goal.

According to the literature, “Relationship between the customer and supplier” (Allen, 2012) and “Effective technology transfer” (Bolatan et al., 2016), are some of the possible factors which can affect the service quality of a Managed Service Contract in the Sri Lankan telecommunication industry.

It was found that the relationship between customer and supplier has a significant impact on Service Quality of Managed Service Contract. Similarly, Butte (2004) stated that it would be a necessary factor to maintain successful customer supplier relationship, especially for service-oriented organizations to deliver better service quality. Confirming the argument of Butte (2004) expressed that the relationship between customer and supplier is utmost important for the quality of the service offered by the service-oriented organization. Allen (2012) also stated that there is a significant impact of supplier/customer relationship on the quality of service. Further, it has found that technology transfer does not have a significant impact on service quality of Managed Service Contract. Contrast to the findings, Bolatan et al., (2016) highlighted that there is a positive relationship between effective technology transfer and quality of service. In the same manner, according to Brah and Lim (2006), Verbano and Venturini (2012) found that there is a strong significant impact of effective technology transfer on service quality.

Technology transfer does not seem to significantly affect the service quality of Managed Service Contract in telecommunication industry in the Sri Lankan context because of the attitude and awareness of the persons who are working under Managed Serviced Contracts in Sri Lankan companies. Organization culture and leadership style of top management in MSP may be the other near possible reason for the failure of this factor.

Most possible reasons for rejecting the second hypothesis may be due to the way of managing culture and communication, morale of employees and innovations at work in Sri Lankan context. In a country like Sri Lanka, it is really difficult to address the management of cross cultural issues, communication styles of stakeholders, understanding each other's contexts for decision making. Morale management of employees who work in telecommunication industry is very poor when it is compared with a western country because there are no proper processes for teams to gain energy or any other mechanisms of restoration during high-stress periods (Wasalathanthri, 2016). According to Wasalathanthri (2016), the above factors can be considered as reasons for the second hypothesis to be rejected in the Sri Lankan context.

7. Conclusion and contribution

This study was mainly carried out to identify the factors which can affect the service quality of Managed Service Contracts in Sri Lanka. The authors have explored the literature and found two factors viz. customer relationship and effective technology transfer which are suited for the study. Two hypotheses were built and it was found that there is a significant impact of customer and supplier relationship on service quality of Managed Service Contract, thus maintaining a good relationship between these two parties is utmost important for better service quality. On the other hand, the relationship between technology transfer and service quality was not significant according to the results found from the data analysis. Hence, from the Manages Service provider point of view, it is not necessary to put much effort on technology transfer mechanisms to deliver better service quality.

As a MSP (Managed Service Provider), it is a mandatory requirement to pay attention to the quality of services as it is one of the critical factors for getting a successful Managed Service Contract. Customer relationship plays a major role rather than technology transfer in the Sri Lankan context. Hence all the staff including top management must build up better relationships with the vendor party while dealing with official matters. Based on the outcomes of the study, it is obvious that the customer relationship is utmost important for better service quality of Managed Services Contract in the Sri Lankan context. Therefore, it is vital for managers within Managed Services firms to maintain a good rapport with customers building their trust, reducing the power difference between these two parties, enforcing higher levels of commitment, ensuring transparency of the processes and keeping effective communication among stakeholders. These factors have been analysed as key variables under customer relationship in the study.

If the staff recruitment for MSP is considered, it is not necessary to recruit persons with significant experience in the telecommunication industry. It does not seem to be necessary to allocate more funds to purchase modern tools and equipment for field operational staff and it seems to be sufficient to manage with the current infrastructure with a moderate value. Sharing and claiming of installation and operation manuals of telecommunication equipment installed in the network does not seem to be important as there does not seem to be any planning and configuration part inbuilt in the service agreement. Usually, it can be fulfilled by using the assistance of NOC (Network Operating Centre) peoples and doing trial and error methods up to a certain extent. MSP does not need to worry about organizational structure and practices maintained by the mobile operators as the MSP has to cover up entirely different area in the management contract. All these implications were brought to deliver better service quality because effective technology transfer is not a critical success factor for a better service quality.

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Integrating digital marketing strategies into small and medium hoteliers: A case in the South Asian context

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Abstract

Small and Medium Enterprises (SMEs) in every sector including tourism, plays a vital role in contributing to economies of most nations around the world despite their level of the economic development. However, digital marketing which is an integral part for tourism in a technology-based world is still a brainteaser for tourism-based SME's in Sri Lanka. Therefore, this study attempts to: investigate the present situation of digital marketing strategy integration in the tourism-based SMEs; identify the factors affecting integration of digital marketing strategies in the sector; and explain how these factors influence the effective integration of digital marketing strategies to gain a competitive advantage within the context of in tourism-based SMEs in Sri Lanka. In order to achieve the main purpose, a conceptual model was developed based on prior literature. The study was empirical in nature and a quantitative methodology was adopted with survey research approach. A structured questionnaire was distributed among the formal tourism SMEs. The target population for this study were the owners of formal tourism SMEs that are registered under SLTDA for the Western Province of Sri Lanka and a total of 83 responses were received. Both descriptive statistical analysis and multiple regression analysis techniques were used to analyze the data using SPSS. The findings showed that the integration of digital marketing strategies in the tourism-based SMEs is not at a satisfactory level, but the tourism-based SMEs have a positive attitude towards the integration. Further, it was identified that the firm specific and resource related factors positively influence the integration of digital marketing strategies. Hence, this study provides implications for different stakeholders of tourism-based SMEs in Sri Lanka to enhance integration of digital marketing strategies to gain a competitive advantage.

Keywords: Digital marketing; Integrated marketing; Tourism SMEs; Sri Lanka

1. Background

Sri Lankan history suggests that, for centuries it has always been a tourist destination because of its strategic geographical position and the exotic rich natural resources. However, the Sri Lankan tourism industry was severely affected because of the separatist's war and only after the year 2009, Sri Lanka could experience a great stride of post-war tourism boom (Fernando, 2016). In

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keeping up with this increased demand in tourism industry, many tourism service providers have emerged to cater for the tourists' demand particularly in accommodation, tour operation and other recreational services. According to Sri Lanka Tourism Development Authority (Sri Lanka Tourism Development Authority [SLTDA], 2016), more than 98% of the formal establishments registered with the government authority for the accommodation category and tour operator establishments are SMEs in Sri Lanka.

Meanwhile, consumers are increasingly moving away from the traditional purchasing practices to digital purchasing and transaction methods and increasingly relying on social media or review forums for other consumers view point on a product or service before making a purchasing decision and hence, IT and innovation plays a significant role in today business (Hamilton & Asundi, 2008; Kaplan & Haenlein, 2010). Especially the tourism service providers have been able to effectively share information about their services to the potential customers through digital marketing channels. Hence, the potential tourists were also able to immediately access to the real time graphical and textural information (Shekhar & Mundhe, 2011). Similarly, there is an increasing competition from the growing informal sector service providers such as home-stays because of the low costs while large-scale online travel operators (OTA) and formal accommodation sector uses on-line platforms such as Trip Advisor, Agoda etc. to promote their services (Miththapala & Tam, 2017). Hence, it is significant that the SME sector to have a proper integration of digital marketing strategies to remain competitive in the industry by creating more value to tourists by adopting digital marketing on a more effective and efficient manner. Integrated digital marketing strategy can benefit in terms of generating more revenue to SMEs while the end customers are experiencing a unique and cost-effective tourist experience (Järvinen, Tollinen, Karjaluoto, & Jayawardhena,2012).

According to the expert interviews had with Miththapala, a tourism expert and analyst, the larger scale tourism organizations in Sri Lanka are strategically and successfully using all these digital channels managed by their own and gain the full potential of what it offers without a problem. However, Sri Lankan formal SMEs are facing many problems in digital channels due to lack of technology-based marketing strategies and the regional competition (S. Miththapala, personal communication. September 20, 2017). Moreover, these SME's are unable to reduce the service costs due to overheads. As a result, now the SMEs come to a precarious situation where they are needed to identify ways to secure their competitive position within in the industry.

As per Karjaluoto and Huhtamäki (2010) and Taiminen and Karjaluoto (2015), effective use and integration of digital marketing strategies can be affected by the firm specific factors, resource related factors and external environment related factors. In Sri Lanka, there are studies to identify the Internet adoption (Suriyapperuma, Yajid, Khatibi, & Premarathne, 2015). Among those are E-commerce adoption (Abeysekara, 2011) ICT and E-commerce adoption (Kapurubandara & Lawson, 2006), E-marketing usage by firms (Clifford, 2005) and Internet marketing of service industries (Tilaksena, 2004) in SME sector, though these studies did not concentrate on importance of integrating digital marketing in tourism sector SMEs for improved competitiveness and key factors associated with effective integration of digital marketing strategies. Therefore, the present study addresses this knowledge gap in the tourism sector SMEs in Sri Lanka and develop the problem statement as to what factors drive the effective integration of digital marketing strategies for competitive advantage in Tourism SMEs in Sri Lanka.

Hence, the research objectives of the study are, firstly, to investigate the extent of digital marketing integration in Sri Lankan tourism sector SMEs, secondly, to identify the factors affecting integration of digital marketing strategies in Sri Lankan tourism sector SMEs, thirdly, to explain how the identified factors influence integration of digital marketing strategies the Sri Lankan tourism sector SMEs.

Section two of the paper describe the literature relevant to the study and develops key hypotheses, section three shows conceptual framework of the study, section four presents the methods of the study and section five is about the data analysis and presentation. Finally, section six presents discussion of findings, the conclusion, implications, limitations and opportunities for future research.

2. Literature review and hypothesis development

This section presents the previous scholar's findings and theories relevant to the study. Ong and Ismail (2008) noted that even though the SMEs were not the focus of explaining competitive advantage in many strategic management theories, it is not logical to assume SMEs could not gain competitive advantage. The concept of dynamic capabilities view has emerged as an attempt to where the resource-based view lacked explaining the complex sustainable competitive advantage in terms of today's dynamic environment. According to Teece, Pisano, and Shuen (1997), dynamic capabilities of a firm is, its ability to respond to the rapidly changing environments for achieving long lasting competitive success through integrating, building and reconfiguring internal and the external competencies. Integration refers to the firm's capability to develop new competencies by assessing their resources and integrating them whereas the organizational learning can be considered the learning that a firm can build based on experience and research to gain competitive advantage. Then the reconfiguration refers to the firm's ability to transform its resources to meet the shifting business environment requirements.

Dynamic capabilities often enable a firm to expand or lay the ground work to diversification resulting the firm to have performance improvements and more avenues to be successful (Liu & Hsu, 2011). Juntunen (2017) points out that many researchers find dynamic capabilities are not limited only to radical change but often support the existing businesses as they are developed through organizational learning and already in the business processes. Further, it is said that the firms with strong yet flexible dynamic capabilities in their existing knowledge have the possibility to achieve competitive advantage as they can effortlessly integrate the innovation in to their products/ services and internal operations.

According to Teece (2017), an organization with strong dynamic capabilities would be able to reconfigure their existing knowledge and resources as needed to innovate and respond to the changes in the environment. Not only internally but in line with other partner firms' activities, these resources must be reconfigured in order to deliver value to end customers. The strength of dynamic capabilities determines how fast and how well a firm can align its resources and business models according to customer needs and wants. In order to respond quickly to the emerging threats and opportunities, firms should be able to swiftly sense and seize opportunities and often change its organizational practices and culture. Further, firms need not be strong in every way to have strong organizational dynamic capabilities but have relatively stronger capabilities than their competitors. Nevertheless, strong dynamic capabilities can lay the foundation for a firm to achieve sustainable competitive advantage as it is harder for a competitor to imitate or replicate the same capabilities in an identical manner due to the unique organizational characteristics such as the culture and business processes it depends on.

As per the dynamic capability perspective of competitive advantage, digital technologies refer to the combination of information, communication, computing and connectivity technologies such as cloud computing, big data analytics, mobile technologies and artificial intelligence. While it allows an organization to be more open and flexible, it also enables a firm to be more innovative and move beyond traditional operational boundaries such as globalization. As a result, digital technologies with the increasing dispersion, have created vast new managerial opportunities and challenges that firms now need to understand the nature of it in order to compete and survive in the global market (Hanelt, Piccinini, Gregory, Hildebrandt, & Kolbe, 2015).

Development breakthrough in the information technology during the last decade have made significant implications to organizations on how they carry out their marketing activities and perform business. Especially the Internet and the E-commerce usage as a channel has claimed to reduce the physical limitations of time and space of traditional brick and mortar business model as well as numerous cost savings related to sales, supply & delivery (Sabherwal & Chan, 2001). Further, the social media usage as a channel has also made a significant implication to businesses emphasizing on how they should enhance customer relationships and how it can be exploited to use for generating viral effect through the positive word of mouth of the consumers (Bernoff & Li, 2008).

According to Russell (2010), the use of digital marketing provides firms with many opportunities, especially from marketing aspect; the utilization of many different channels to promote products/ services, cost savings, improve communications with the customers and branding as well as the ability to assess the effectiveness of the marketing activities that are carried out. Accordingly, linking all together as digital marketing, it can be considered to help large and SME firms alike on cutting down costs, brand building through creating awareness, attracting new customers and increasing loyalty of existing customers.

Digital marketing can be referred as the strategic use of all types of digital media tools that enables firms to create and maintain relations with the customers to market their products and services. Digital marketing is used as an umbrella term and it includes a wide range of digital channels such as the internet, mobile, social media and other non-internet related digital form of communications like SMS and digital TV (Wymbs, 2011). Further, an integrated digital marketing strategy can be defined as integrating all the digital channels to work together in harmony as a unified force to maximize the communication impact on the organizational message and branding according to a marketing strategy that is in line with the business strategy.

Although the opportunities of Digital technologies are large, firms should not underestimate the numerous implications and challenges that the transformation entails; especially in the areas of information security, new business models and the increased requirement of qualified staff. Many research has emerged during the last decade on digital innovations and how it enables organizations to create new business models and achieve competitive advantage in business but the specific impact of digital technologies on SME organizations are still at large to explore (European Commission, 2013; Hanelt et al., 2015).

Number of studies have discussed that the SMEs can greatly benefit from using digital marketing to their businesses. Nevertheless, studies have also shown that unlike large organizations, many SMEs have significant problems in identifying proper applications and strategies to use the full potential of the digital marketing tools to benefit their businesses (Gilmore, Gallagher, & Henry, 2007). According to the recent studies conducted on 421 SMEs in Central Finland about digital marketing adoption (Taiminen & Karjaluoto, 2015) and 462 SMEs in the USA about social media usage (Moyle, 2012), many SMEs have not widely adopted digital marketing for their marketing purposes even though the internet penetration and social media usage are high in the subjected countries.

Taiminen and Karjaluoto (2015), finds in his study that website and search engine optimization SEO as the two most used digital channels and online visibility can be considered as the most important element in the digital marketing mix even though digital channels were not actively used by many SMEs. With regards to social media, findings indicate that the SMEs did not understand it as a two-way communication method capable of building relationships with the customers similar to other studies such as Kaplan and Haenlein, (2010) and Ahuja and Medury, (2010). Further, studies confirm that SMEs attempt to use social media for driving sales and thereby use as a one-way promotional channel regardless of the firm size. However, studies indicate that the large organizations actively use most of the digital channels and gain more than the SMEs.

With reference to the Sri Lankan context, number of studies have conducted research on Sri Lankan SMEs on the use of information technology, internet marketing and discussed different aspects such as the development of theoretical conceptual model to empirically test internet adoption and its impact on SME performance (Suriyapperuma et al., 2015) empirical case study analysis on E-Commerce adoption and strategic use among tourism SMEs (Abeysekara, 2011), How E-marketing is used by firms to market their products and services (Clifford, 2005) and the internet marketing of service industries (Tilaksena, 2004).

Accordingly, with these findings, organizations need to understand the characteristics and the dynamics that the individual marketing channels as well as the integrated digital marketing as a whole implicates on the organizational business activities and its processes, in order to select effective marketing strategies that will gain the competitive edge in their respective industries.

The Internet and the E-commerce usage as a channel has claimed to reduce the physical limitations of time and space of traditional brick and mortar business model as well as numerous cost savings related to sales, supply and delivery (Chan, 2001) during last decades. Further, the social media usage as a channel has also made a significant implication to businesses emphasizing on how they should enhance customer relationships and how it can be exploited to use for generating viral effect through the positive word of mouth of the consumers (Bernoff & Li, 2008).

SMEs are at an early stage of integrating digital marketing strategies (Eriksson, Hultman, & Naldi, 2008) and many numbers of digital marketing initiatives fail to deliver the expected outcomes (Weber, 2009). Large firms on the other hand tend to successfully adopt digital marketing strategies and integrate it to their business processes due to their accessibility to necessary resource and knowledge than their SME counterpart (Barnes et al., 2012). Digital marketing integration of SME can be affected by internal and external factors covering firm specific factors, infrastructure and environmental factors (Dholakia & Kshetri, 2004). According to Lockett & Thompson (2001), SME decision making is heavily influenced by the available resources however, external factors pose a relatively low influence. Further, the studies of Karjaluoto and Huhtamäki (2010) and Taiminen and Karjaluoto (2015) report that firm specific factors, resource related factors and external environment factors support or hinder the integration of digital marketing strategies of SME firms.

The firm specific factors can be identified as the owner/ manager’s technology proficiency (skills or know-how of using new technologies), attitude (opinion and the motivation of the management/ staff to use digital media channels) and awareness of perceived benefits (knowledge on strategically using these channels to benefit of the business) on the strategic integrative usage of digital channels (Kwon & Zmud, 1987; Cragg & King, 1993; Premkumar, Ramamurthy, & Nilakanta, 1994; Taiminen & Karjaluoto, 2015). According to the findings of Taiminen and Karjaluoto (2015) firm specific factors have a significant influence in delaying the integration of digital marketing strategies by SMEs. They have particularly identified that the owner/ manager's knowledge on digital channels, attitude towards digital channels in actively pursuing it and the awareness of the benefits it can gain to the business as key individual factors. Thus, the following hypothesis is formulated:

H1 - There is a positive relationship between the firm specific factors and integrating digital marketing strategy

The studies of Karjaluoto and Huhtamäki (2010) and Taiminen & Karjaluoto (2015) have found that the resource related factors namely availability of human, financial and technology resources play another key influencing role where resource related factors delay the integrating digital marketing strategies in SMEs. However, the study further states that the technological resources played a minor role on strategic digital marketing integration than the human and financial resources. Similarly, studies have identified that the SMEs lacked enough human resources, capital and knowledge in strategically integrating digital marketing strategies to reach its full potential (Gilmore et al., 2007). This leads to the following hypothesis:

H2 - There is a positive relationship between the resource related factors and integrating digital marketing strategy

The findings of Karjaluoto and Huhtamäki (2010) and Taiminen and Karjaluoto (2015) reveal that the external environment factors outside an organization directly control and play another significant supporting role and Taiminen and Karjaluoto (2015) stated that external factors advocate the integration of digital marketing strategies by the SMEs. These factors can be identified as the availability of outside support (government or third parties) and the competition in the industry. These factors are widely cited in literature (Chong & Pervan, 2007; Kaynak, Tatoglu, & Kula, 2005; Levy, Powell & Worrall, 2005; Järvinen et al., 2012) as environmental moderators that decide the level of intensity of the relationship between organizational factors and competitive strategy.

External environmental factors that influence and promote SMEs to keep up with changes to the rapid changes in the business environment include outside support that strengthen adoption and integrating capabilities and new technologies in the organization. These covers support services to SMEs' value creation process in an economy from various stakeholders covering government institutions, private sector firms (Karjaluoto & Huhtamäki, 2010; Taiminen & Karjaluoto, 2015). Further, competitor intensity in a dynamic environment improves probability of adopting and integrating digitally enabled processes in SMEs. This is a significant force in a competitive market (Teece, 2017) as increased response of competitors in using new technology in a globally dynamic industry like tourism will accelerate the pace of using technology-based products and systems.

In rapidly changing technologies, markets, and competition the SMEs need to prompt response capabilities to cope with the changing external conditions in order to survive in the dynamic market. The dynamic capabilities strengthen

SMEs to obtain secure real-time information about market, make quick decisions that leads to improve performance. Thus, responding capabilities to the demands from dynamic external environment are critical (Zahra & Covin, 1995; Yang, 2012). Such circumstances pave way for tourism SMEs to adopt new technologies including digitally integrated business strategies. External environmental factors such as the available outside support in using technologies and competitor intensity, intensify this response of SMEs, especially in a developing context. As argued by Schilke (2014) coordinating process which include digitally integrated processes benefit SMEs by improving their dynamic capabilities in an industry like tourism which is globally competitive and sensitive to rapid technology-based changes. Hence, the study develops the following two moderator hypotheses:

H3 - External environment factors (outside support and competitor intensity) moderate the relationship between firm specific factors and integrating digital marketing strategy

H4 - External environment factors (outside support and competitor intensity) moderate the relationship between resources related factors and integrating digital marketing strategy

3. Conceptual framework

Based on the literature review, a conceptual model was developed as shown in Figure 1. The firm specific factors and the resource related factors are identified as directly influencing digital marketing adoption by the SMEs, and hence independent variables in this study Taiminen and Karjaluoto (2015). Similarly, the external environment factors are the moderating factors of this study (Karjaluoto & Huhtamäki, 2010; Teece, 2018). Strategic business integration of digital marketing is conceptualized as the dependent variable of the study (Nitto & Nakamura, 2015; Pawar, 2014; Schultz &. Kitchen,1997; Ivanov, 2012). Based on the literature review and the nature of the objectives, the study developed the conceptual framework (see Figure 1).

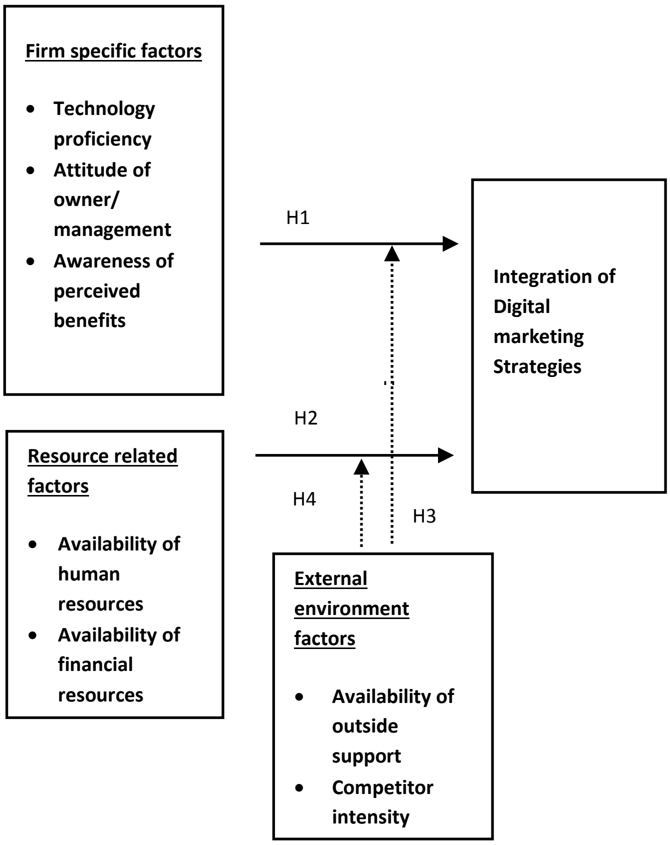

Figure 1: Conceptual Framework
Source: Authors developed based on Literature review

4. Methods

The study adopted quantitative research methodology and population of the study were the owners of formal tourism SMEs that included both accommodation providers and travel agents registered under Sri Lanka Tourism Development Authority (SLTDA) in the western province of Sri Lanka in 2017. Survey research strategy was used to collect primary data by administering a structured questionnaire. The targeted sample size was 100 which was approached using judgmental sampling procedure to cover medium, small and micro level outlets representing both accommodation providers and travel agents of which 83 SMEs responded to the questionnaire. The owner manager was the key informant to respond to the questionnaire.

In order to operationalize the key variables, multi-items were adapted from the prior- studies. Firm specific factors measured using three dimensions named as the level of technology proficiency was measured through two indicators covering the currently used marketing methods and level of social media usage (adapted from Karjaluoto & Huhtamäki, 2010; Taiminen & Karjaluoto, 2015); attitudes of the owners was measured through two indicators covering preference to use digital marketing in organization and current level of digital marketing adoption (adapted from Karjaluoto & Huhtamäki, 2010; Taiminen & Karjaluoto, 2015); and awareness of perceived benefits was measured through three indicators consisting of understanding about the benefits of digital marketing, effect digital marketing on sales and current range of contribution from digital marketing (adapted from Karjaluoto& Huhtamäki, 2010; Taiminen & Karjaluoto, 2015). The resource related factors representing two dimensions as human resource availability was measured through seven indicators covering availability of human resources for business work, skill level of the staff for business work, availability of skillful staff for business, allocation of separate staff for digital marketing, willingness to allocate more staff for digital marketing, staffs capability on handling digital marketing and skill level of the staff for digital marketing and financial resource availability was measured through six indicators including availability of a defined marketing budget, financial availability for marketing, level of financial expenditure for digital marketing, willingness to spend on digital marketing, financial availability for digital marketing and current marketing expenditure by digital marketing channel (adapted from Karjaluoto & Huhtamäki, 2010; Taiminen & Karjaluoto, 2015). The moderating variable of external environment factors represented two dimensions namely the availability of outside support and competitive intensity. Availability of outside support was measured using seven indicators consisting of availability of government support on digital marketing related support, availability of digital marketing awareness activities from the government, availability of private sector support on digital marketing services for SMEs, availability of digital marketing awareness activities from the private sector, affordability of private sector services on digital marketing, willingness to handle digital marketing by SMEs themselves and possibility to outsource digital marketing to third party while competitor intensity was measured in four indicators including the competitiveness in the industry covering attitude on the competitiveness in the industry, effect on sales due to current competition, level of the innovation due to competition and influences from current competitors using digital marketing (adapted from Karjaluoto & Huhtamäki, 2010; Taiminen & Karjaluoto, 2015; Teece, 2017).

The dependent variable of integration of digital marketing was measured as a single variable using twelve indicators including availability of a defined digital marketing strategy, understanding of digital marketing centralization on business activities, website's integration on communication, website's integration on making purchases, availability of online practices for business operations, availability of up-to -date services on the website, availability of integration between the website and social media, availability of a properly maintained blog, availability of a customer review collection mechanism, availability of a strategy to centralize the website with core business activities, understanding of website's importance on marketing activities and understanding on emails' influence on branding (adapted from Karjaluoto & Huhtamäki, 2010; Taiminen & Karjaluoto, 2015).

Once the questionnaire design was completed, a pilot survey was conducted to test the clarity, interpretation and the appropriateness of the questions from four respondents in the same industry. Based on the feedback received, several revisions to the original questionnaire was made and some questions were eliminated. Cronbach's Alpha based reliability tests and factor analyses were conducted to measure the reliability and validity of the key constructs. As per the findings, all the variables scored Cronbach's Alpha value greater than 0.6 and hence internal consistency reliability of the variables was satisfied. Factor analysis results have shown individual factor loadings greater than 0.5. Hence, the variables were considered as valid measures. Further, it was reasonable to assume the all variables have face validity and construct validity as they were adapted from well-established measures in literature.

5. Data analysis and presentation

This section presents the findings of the data analysis and discussion.

5.1 Characteristics of the sample

Firms by the type of establishment was categorized in the table 1 that shows a 54.22% as travel agents whereas accommodation providers represent at a 39.76% and the remaining 6.02% represented as the service providers. The size of the tourism establishment was categorized as medium, small and micro based on the definition of Ministry of Enterprise Development, Industrial Policy & Investment Promotion of Sri Lanka. Accordingly, the firms representing small firms counts for a majority at a 60.24%, medium size firms represented a 24.10% and the Micro size firms accounts for a 15.66% representation. Furthermore, as shown in the table 3, majority 75.1% of the respondents' firms are located in the Colombo District whereas 20.5% firms located in the Gampaha district and the remaining representation of 4.4% is located in the Kalutara district. As indicated in the table 4, firms with more than 10 years' experience represents at 28.9% and firms that are 6-10 years mature accounts for 22.9% whereas the majority 48.2% of the firms are representing experience of 1-5 years and no firms was represented for less than 1-year experience category.

Table 1: Sample by type of establishment

Type of Tourism Establishment	%
Travel agents (Tour Operators, Ticketing Agents..etc	54.22
Accommodation providers (Hotels, B&Bs..etc)	39.76
Service Providers (Adventure, Sports and Other Services)	06.02

Source: Survey data, 2017

Table 2: Sample by size of establishment

Size of the Tourism Establishment	%
Medium Establishment (Between Rs. 20 Mn and Rs. 50 Mn Assets)	24.10
Small Establishments (Between Rs. 1 Mn andRs. 20 Mn Assets)	60.24
Micro Establishments (Less than Rs. 1 Mn Assests)	15.66

Source: Survey data, 2017

Table 3: Sample by size of establishment

District of Tourism Establishment	%
Colombo	75.1
Gampaha	20.5
Kalutara	4.4

Source: Survey data, 2017

Table 4: Sample by size of establishment

Years of Industry Experience	%
More than 10 Years in the Industry	28.9
6- 10 Years in the Industry	22.9
1-5 Years in Industry	48.2

Source: Survey data, 2017

5.2 Descriptive statistical analysis

According to the descriptive statistics, table 5 derived for the variables measured using Likert measurement scale, moderator variable of Competitor intensity has the highest mean (3.9839) and a standard deviation of 0.62449 implying that most of the responses are within 3.9839±0.62449 (3.35941 - 4.60839 on Likert scale). Lowest mean (2.2620) is also have with the moderator variable of availability of outside support along with a standard deviation of 0.71664 implying that most of the responses are within 2.262±0.71664 (1.54536 - 2.97864 on Likert scale).

Lowest standard deviation (0.39218) is with the independent variable of Attitude of owner along with a mean value of 3.6234 implying that the majority of responses are within 3.6234±0.39218 (3.23122 – 4.01558 on Likert scale). Independent variable of Technology proficiency has a mean of 2.4337 and a standard deviation of 0.75151, suggesting that the majority of the responses are within 2.4337±0.75151 (1.68219 - 3.18521 on Likert scale). Similarly, the Awareness of perceived benefit has a mean of 3.3996 and a standard deviation of 0.72715; implying that most of the responses are within 2.67245 to 4.12675 Likert scale representation (3.3996±0.72715).

Further, the independent variable of availability of human resources has a mean of 3.0341 and a standard deviation of 0.72075 suggesting that more responses are within 3.0341±0.72075 (2.31335 - 3.75485 on Likert scale). Similarly, the availability of financial resources has a mean of 2.3153 and a standard deviation of 0.77740 implying that most of the responses are within 2.3153±0.77740 (1.5379 - 3.0927 on Likert scale). Finally, the dependent variable, Integration of digital marketing strategies has a mean of 3.1596 and a standard deviation of 0.79784 indicating that the majority of responses are within Likert scale 2.36176 - 3.95744 (3.1596±0.79784).

Table 5: Descriptive statistics of variables

	n	Min	Max	Mean	Std. Deviation
Technology Proficiency	83	1.22	4.22	2.4337	.75151
Attitude of owner	83	2.58	4.25	3.6234	.39218
Awareness of benefits	83	1.83	4.67	3.3996	.72715
Human resources	83	1.50	5.00	3.0341	.72075
Financial resources	83	1.00	4.00	2.3153	.77740
Outside support	83	1.00	3.75	2.2620	.71664
Competitive intensity	83	2.00	5.00	3.9839	.62449
Integration of digital marketing strategies	83	1.38	4.88	3.1596	.79784

Source: Survey Data,2017

According to table 6, association between the Technology proficiency and Integration of Digital marketing strategies has the strongest correlation among the relation at 0.527 on 99% significant level. Association between Attitude of owner and Integration of Digital marketing strategy relationship has a moderately positive correlation of 0.347 at a 99% significant level. Association between Awareness of perceived benefits and Integration of Digital marketing strategies has a moderately positive correlation of 0.436 at 99% significant level. Association between Availability of human resources and the Integration of Digital marketing strategies relationship is significant at 99% with correlation 0.481 representing a moderately positive correlation. Next association between the Availability of financial resources and Integration of Digital marketing strategies has a moderately positive correlation of 0.287 at 99% significance. Finally, the identified moderator with direct effect Availability of outside support and Integration of Digital marketing strategies also has a moderately positive correlation of 0.377 at 99% significance whilst that of Competitive intensity is 0.213 at 95% significance.

Table 6: Summary of correlations between variables

		Attitude of owner	Awareness of benefits	Human resources	Financial resources	Outside support	Competitive intensity	Integration of digital marketing
Technology proficiency	Pearson Correlation	.381	.250	.482	.433	.366	.003	.527
	Sig.	.000	.023	.000	.000	.001	.982	.000
Attitude of owner	Pearson Correlation		.479	.253	.102	.144	.221	.347
	Sig.		.000	.021	.358	.195	.045	.001
Awareness of benefits	Pearson Correlation			.296	.107	.201	.300	.440
	Sig.			.007	.334	.068	.006	.000
Human resources	Pearson Correlation				.481	.609	-.077	.481
	Sig.				.000	.000	.489	.000
Financial resources	Pearson Correlation					.291	-.111	.287
	Sig.					.008	.318	.008
Outside support	Pearson Correlation						-.113	.377
	Sig.						.309	.000
Competitive intensity	Pearson Correlation							.213
	Sig.							.053

Source: Survey data, 2017

6. Test of hypotheses

6.1 Firm specific factors and resources related factors of the SMEs

According to the table 7, adjusted R square of the model is 0.381. That means firm specific factors, resources related and external environmental factors in the model explain 38.1% of the total variance in the dependent variable of strategic business integration of digital marketing.

Table 7: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.647a	.419	.381	.62770	1.579

Source: Survey Data,2017

In the table 8, the F value is 11.095 and overall model is significant at the 0.00 level. Therefore, it concluded that 41.9% of the variance in the strategic business integration of digital marketing is explained by the independent variables.

Table 8.: Regression ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.858	5	4.372	11.095	.000
Residual	30.339	77	.394		
Total	52.197	82			

Source: Survey Data,2017

Table 9 shows the regression coefficients of the independent variables with their significance. It shows that both attitude factor and the financial factor have become insignificant which means that these two factors do not have a statistically significant relationship with the dependent variable (P value is greater than 0.05) when presented with the other independent variables. Technology factor has the strongest Beta value at 0.337 implying that there is a strong positive impact with the integration factor. Next the Awareness factor has a Beta value of 0.273 implying that there is a lower positive impact with the integration factor comparing to the technology factor. Then the Human factor has the lowest Beta value of 0.232 implying that there is a lower positive impact with the integration factor comparing to the both technology and awareness factors.

Table 9: Regression coefficients

Model	Unstandardized Coefficients B	Unstandardized Coefficients *Std. Error*	Standardized Coefficients *Beta*	t	Sig.
1 (Constant)	.280	.674		.415	.680
Technology proficiency	.357	.115	.337	3.100	.003
Attitude of owner	.060	.212	.030	.283	.778
Awareness of benefits	.300	.111	.273	2.700	.009
Human resources	.256	.120	.232	2.138	.036
Financial resources	-.002	.106	-.002	-.020	.984

Source: Survey Data,2017

In relation to the hypothesis -1 that argues the positive effect of Firm specific factors on integration of digital marketing strategies, it can be observed that both technology proficiency (Beta= 0.337, $p<0.05$)) and awareness of perceived benefits (Beta= 0.273, $p<0.05$)) have a significant positive influence on the integration of digital marketing strategies in the tourism related SMEs though attitudes of owner (Beta= 0.030, $p>0.05$) does not significantly affect the integration. With reference to the hypothesis -2 that proposed the positive effect of resources related factors, it is evident that human resources availability (Beta=0.232, $p<0.05$) has a significant positive impact on integration of digital marketing strategies in SME related tourism outlets whilst financial resources (Beta=-0.002, $p>0.05$) does not seem to have a positive effect on integration in these SMEs. Thus, the hypothesis 1 and 2 are partly accepted.

6.2 Moderating effects of external environment

According to the table 10, it is evident that outside support does not moderate influence of technology proficiency and human resource availability on integrating digital marketing ($p>0.05$). However, it is evident that outside support positively moderates positively the influence of favourable attitudes of the owner, awareness of perceived benefits and finance availability on integrating digital marketing strategies ($p<0.05$). Table 10 also shows that competitive intensity in the industry does not significantly moderates the influences of technology proficiency, owner's favourable attitudes, awareness of the perceived benefits, human resources and finance availability on integrating digital marketing strategies ($p>0.05$). Therefore, there is a partial support the hypothsis-3 and 4.

Table 10: Summary of regression analysis of environmental moderators

Independent Variable X Interaction Variable	Moderator Effects		
	R^2	***β***	***Sig.***
Technology Proficiency X Outside support	.296	.145	.157
Attitude X Outside support	.232	.334	.001
Awareness X Outside support	.260	.261	.009
Human resources X Outside Support	.259	.179	.091
Finance X Outside support	.141	.255	.023
Technology Proficiency X Competitive intensity	.291	.135	.216
Attitude X Competitive intensity	.131	.103	.335
Awareness X Competitive intensity	.194	-032	.806
Human resources X Competitive intensity	.252	.152	.148
Finance X Competitive intensity	.094	.126	.317

Source: Survey Data,2017

7. Discussion and conclusion

This section discusses the findings of the data analysis with reference to the objectives specified above, conclusions, implications and further research opportunities.

7.1 Discussion

The first objective was to investigate the extent of digital marketing integration in Sri Lankan tourism sector SMEs. As per the descriptive analysis of the study, the integration of digital marketing strategies among the studied tourism SMEs are not in satisfactory level similarly, as found in studies (Arnott & Bridgewater, 2002; Gilmore et al., 2007; Moyle, 2012; Taiminen & Karjaluoto, 2015; Waters & Lemanski, 2011). Many SMEs have not widely adopted integration of digital marketing for their marketing purposes even though the internet penetration and social media usage is high in their countries. This underlies the poor level of integration of digital marketing strategies in the Sri Lanka SMEs as well. It is evident that the tourism SMEs are not widely integrated digital marketing strategies to their competitive advantage which reflects the opportunities for digital marketers to develop suitable integrating strategies for tourism SMEs

The second objective of the study was to identify the factors affecting integration of digital marketing strategies in Sri Lankan tourism sector SMEs. it was found that the outside support as in outsourcing, facilitate the integrating digital marketing strategies in SMEs implying that the marketers to come up with outsource able marketing services for tourism SMEs. It highlights the need of training programs reflecting the training opportunities available for marketers. Similarly, availability of outside support is identified to be in extremely poor level with responses ranging from strongly disagree to disagree reflecting the lack of outside support for digital marketing. Also, the technology proficiency seems to be also in very low level among the tourism SMEs along with the availability of human and financial resources. Awareness of perceived benefits also seems to be in low satisfactory level where the mean is neutral and responses ranging from disagree to agree implying that the tourism SMEs less aware about the benefits brought by integrating digital marketing. These findings are consistent with initial results revealed in the discussion held with Miththapala (S. Miththapala, Personal Communication. September 20, 2017).

The third objective of the study was to to explain how the identified factors influence integration of digital marketing strategies the Sri Lankan tourism sector SMEs. As per the findings, Firm specific factors including Technology proficiency, and Awareness of perceived benefits and resource related factor of availability of human resources were found to be positively influencing factors on integrating digital marketing strategies for tourism SMEs in Sri Lanka. This finding is consistent with the findings of the studies undertaken by Karjaluoto and Huhtamäki (2010) and Taiminen and Karjaluoto (2015). Nevertheless, attitude of the owner as a firm specific factor and financial resource availability as a resource related factor did not support the integrating digital marketing strategies in the sector.

Further, it was found that the availability of outside support positively moderates the effect of attitudes of the owner, awareness of the perceived benefits and financial resources availability in increasing the integration of digital marketing strategies of the tourism SMEs in Sri Lanka whilst availability of outside support did not see to moderate the effect of technology proficiency and human resource availability in enhancing the integration of digital marketing strategies in the sector. It was also found that completive intensity did not have any moderating role in influencing technology proficiency, attitudes of the owner, awareness of perceived benefits, human resource availability and finance availability in promoting the integration of digital marketing strategies in the sector. Hence, these mix findings seem to be partly supporting the findings of Taiminen and Karjaluoto's (2015) study. As a result, this phenomenon can be justified based on the previous study of Karjaluoto and Huhtamäki (2010) which provides evidence for the positive role of the outside support such as outsourcing in facilitating the integrating digital marketing strategies in SMEs.

7.2 Conclusion

This study contributes to the emerging digital marketing literature by providing an overview of the level of integration, attitudes, drivers and barriers relating to digital marketing strategies among the tourism SMEs in the western province of Sri Lanka. The purpose of this study was to examine the level of digital marketing strategies used in tourism SMEs, to increase understanding of both the factors influencing the proper integration and the effective strategic utilization of digital marketing channels for SME's marketing efforts. The findings of this study conclude that the SMEs participated in this research are not strategically integrated with the digital marketing channels to their advantage; despite they already have the required tools and infrastructure in place.

With respect to the reasons for the lack of integration and strategic utilization of digital channels among the Sri Lankan SMEs; the low level of technology proficiency, availability of outside support, human and financial resources along with the mixed level of awareness on perceived benefits might act as significant barriers. Since the SMEs already have the required digital tools and the owners are using these channels such as social media to their personal use, lack of proper integrating strategies among the SMEs might explain the low level of technology proficiency. Also, the role of the availability of outside support in positively moderating the influence of owner's positive attitudes and awareness of perceived benefits on integration of digital marketing strategies can be explained as a significant force because the proper digital marketing strategies needs to be aligned with the business strategies on which a third party have low influence without the management's cooperation.

Similarly, the low level of available human resources as well as poor of access to skilled staff need to be addresses in order to improve the digital integration. The reasons for low level of financial resources might also not be due to actual lack of financial resources, but due to the unwillingness to spend on digital marketing perhaps because of the less convinced return on investment. Further the favourable level of attitude can be explained as that SME's are following the competitor trends and might also feel the need for digital channels to act as an official information source where it could recognize the business as a valid one. Moreover, considering the mixed results have on the awareness of perceived benefits against the already invested all the digital marketing tools at their disposal, it is also questionable whether the SMEs are aware about the actual benefits brought by integrating digital marketing strategies.

Equally, with reference to relatively lower level of availability of outside support for integration digital marketing strategies, it might suggest that though the SMEs are willing to outsource the digital marketing aspects, outsourcing support as well as direct support from government and the private sector providing such support services in the industry for integrating digital marketing strategies can be at a poor level.

7.3 Managerial implications and recommendations

SMEs are highly sensitive to the resource allocation and they are usually tending to be more skeptical on allocating funds and human resources (Gilmore et al., 2007). As such digital marketing can also be considered to require investing in monetary and human resources. Nevertheless, as discussed earlier, the results reveal that most Sri Lankan tourism SMEs have already invested and possess the required digital tools and the infrastructure platforms operational at their disposal; but fail to receive the optimal benefits that the strategic integration of digital marketing tools can bring to their advantage. Hence, the SME firms should understand the new environment and the reasons for digital marketing not to perform as expected before they can strategically utilize its full potential.

Further, instead of focusing on bringing their digital channels to the consumer, SME management needs to re-evaluate their standpoint and develop proper digital marketing strategies (which should be in line with their business strategies) to centralize their business activities around the website and the available digital marketing channels. Particularly using the digital channel as a path way to channel customers and reach for the services. Since most of the SMEs are not experts in marketing, usually the marketing effectiveness depending on the digital marketing strategy and the return on investment (ROI) at first is difficult to evaluate and justify. Thereby, it is smarter for a tourism SME to initially focus on the core business; offering the best possible services to their customers while slowly building their digital marketing strategy around the website and the other media channels connected as a web. Such strategies could include but not limited to online reviews, Search engine optimization (SEO), Social media optimization (SMO) and online advertising to make it more effective (Chaffey & Smith, 2017). Moreover, outsourcing the marketing activities to a capable third party will also helpful in focusing more on the core business and develop better customer centric services. Nevertheless, having better services that exceeds customer expectations are more important than focusing on improving just the marketing because after all that is what drives and defines the business.

The study also highlights the importance of the availability of outside support to fulfill the identified SME digital marketing awareness and skills training needs for staff. This is something that the government and the regulating bodies should take note of. They should follow more of a facilitating role at first than a regulatory role. Initially the digital platform and the groundwork needs to be laid out by conducting necessary training programs (awareness / skill) and providing the necessary support to embrace strategic digital marketing integration by the SME firms. This could start from a key strategic point such as the official tourism website for Sri Lanka where the strategies should be developed to link, centralized around and integrated with the tourism SMEs to align with the main national level tourism strategy.

7.4 Limitations and future research

The findings of this study should be considered subjected to certain key limitations. It focuses on one industry with different categories (Tourism SMEs) in one region (Western province) in Sri Lanka and thereby the results may not be generalized for other locations. Similarly, the data analyzed for this research is gathered during a period and would expect to change over time considering the digital marketing practices are highly dynamic and emerging. Further, as the study was mainly based on survey strategy, it focused on getting only structured and quantitative responses from the respondents, which suffers insight depth deficit relating to hidden issue of digital marketing in the industry.

Considering the above limitations of this study, it is possible to carry out future research by collecting a sample covering all the provinces in Sri Lanka. Further, it is ideal to increase the sample size covering on more primary properties such as the tourism category of the firm, firm size or focus on the informal sector as well. Furthermore, as the independent variables in the regression model explained 41.9 of the total variance of integration of digital marketing strategies in the sector, the future research should investigate other important factors which are not identified in the conceptual model. It is possible initially to identify such unique factors to the sector by undertaking some qualitative, in-depth studies with tourism SMEs and industry experts.

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Sri Lankan purchase intentions of organic cosmetics with health value as a mediator

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Abstract

Increased community awareness on various environmental problems and growing consumer trend of healthy lifestyles has changed consumer behavior and induced purchasing decisions on green products. In the global market, there is a growth in demand for organic and natural care cosmetics. Organic cosmetics are preferred by consumers than conventional cosmetics because organic cosmetics use botanically sourced ingredients that do not contain synthetic chemicals and are manufactured in such way to preserve the integrity of the ingredients thus not harmful in the long run. As a result of the growing number of organic consumers, marketers are targeting the organic market segment thus the cosmetic industry is an important segment that cannot be ignored. Most of the cosmetics companies are introducing new products with organic attributes to capture these environment and health conscious consumers. However, there is a dearth of research been conducted regarding this product category within Sri Lanka. Therefore, the purpose of this study is to investigate the determinants of purchase intentions of organic cosmetics using the Theory of Planned Behaviour. Furthermore, this study extends on the application of the Theory of Planned Behaviour by examining the mediating effect of health value on the attitude-purchase intention relationship. A deductive approach was incorporated to construct the conceptual framework and to form the hypothesis. A survey was conducted with 300 respondents from the Western province, Sri Lanka and data was analyzed using correlation and multiple regression analysis. The results indicate that attitude, subjective norm, and perceived behavioral control have a significant positive impact on purchase intention of organic cosmetics and that health value had an indirect effect or mediating effect on attitude and purchase intention of organic cosmetics. The findings of this study present important theoretical and practical implications for organic cosmetics consumer purchasing behavior.

Keywords: Female consumers; Health value; Organic cosmetics; Purchase intention; Sri Lanka; Theory of Planned Behaviour

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1. Introduction

Awareness of the destruction of natural resources has raised the issue of environmental protection, which in turn has created eco-friendly consumption called green consumerism. As the issue of environmental protection has gained attention, many firms and consumers are beginning to realize that they are members of the wider community and therefore must behave in an environmentally responsible manner (Wanninayake & Randiwela, 2008). According to Wanninayake & Randiwela (2008) the study revealed that Sri Lankan customers are substantially aware of green products and that they are willing to pay something more for green products. Specifically, consumer demand has led to the increased diversity of green product categories such as fast moving consumer goods (FMCG), personal care products and organic food. As green products have gained popularity in the market, more consumers have looked for greener products (Nimse, et al., 2007).

The market for green and organic cosmetics is expanding globally (Onel, 2016). The rising health and go-green consciousness and the growing consumer awareness of the hazards of synthetic chemicals have fuelled the demand for a healthier life style and for organic cosmetics. Organic cosmetics are formulated from agricultural ingredients which are grown without the use of pesticides, synthetic fertilizers, sewage sludge, genetically modified organisms or ionizing radiation, making them more desirable among these green consumers (Organic.org, 2016). Global organic beauty market has increased considerably in recent years and considered as one of the growth markets in the cosmetic industry. Increasing use of cosmetic products among consumers in India, China and Brazil along with rising awareness towards harmful effects associated with chemical substances is likely to fuel demand for organic personal care products over the forecasted period. Ability of natural ingredients to provide anti-oxidation properties and improve skin immunity is expected to be an advantageous factor for the market growth. Therefore, it is evident that organic cosmetics have gained popularity in a global scale and it is a growing market with much potential.

Considering the Sri Lankan context, it is evident that the organic food culture is becoming popular in Sri Lanka. Abundant research has been carried out regarding organic food and FMCG product purchase intentions in Sri Lanka (Samarasinghe & Ahsan, 2014). The current market value of the cosmetics and toiletries market is estimated to be US$ 150 million and has an average growth rate of 11 percent (Pathmaperuma & Fernando, 2018). There are 120 local cosmetics and beauty care product manufacturers and more than 100 importers of such products. Also, there are currently 1800 skin care products and 1200 hair care products available in the Sri Lankan market.

Sri Lankan manufacturers and importers provide almost equal numbers of personal care products to consumers. Most of the local producers focus on adding organic personal care products to their portfolio and many brands are developed to cater to unique niche segments. For an example, according to an article published in the Daily Financial times in 2012, local manufacturers launched organic bath and body products to the Sri Lankan market, positioning in luxurious setting.

However even though there are organic cosmetic producers, there is less research been conducted on organic cosmetics in Sri Lanka. According to Randiwela & Mihirani (2015) unlike the organic food market, manufactures and marketers of cosmetics and personal care products, being a major segment within the FMCG sector, will find difficulty in developing strategies specifically related to green cosmetics since the consumer behaviour towards such products are unknown. Therefore, since there is a dearth of research on consumer purchase intentions of organic cosmetics in Sri Lanka, it can be concluded that the determinants of purchase intentions of organic cosmetics are not explained appropriately.

Furthermore, in this context an article published on the Sunday Times newspaper in 2018 stated the Sri Lankan market is flooded with skin care products that contain dangerous levels of heavy metals such as mercury and that a rising number of women seek medical help. It further elaborates the views of few consultant dermatologists stating the damage that can be caused to organs due to long term exposure to such products and that cosmetics should be given priority like medicine. Thus, due to consumers' concern about the synthetic chemicals in beauty products has led the search for organic cosmetics by the consumers (Kim & Seock, 2009). Considering organic cosmetics, attention was paid to health consciousness because organic cosmetics can be equated to organic food product category (Kim & Chung, 2011). Thus considering the ingredients is one of the most important product attributes in choosing food and personal care products, which are directly related with human health thus health consciousness, should be a main direct motivator when buying these products hence health value can be a mediator (Liobikiene & Bernatoniene, 2017). According to Sekaran & Bougie (2013) the mediating variable surfaces as a function of the independent variable operating in any situation and helps to conceptualize and explain the influence of the independent variable on the dependent variable. However, all previous research done in the organic cosmetics have tested how the health value has impacted on the attitudes towards organic cosmetics using the theory of planned behaviour (Kim & Seock, 2009; Kim & Chung, 2011) but it is not tested as a mediator in the attitude - purchase intention relationship.

Therefore, the proposed study sets forth to examine Sri Lankan consumers' purchasing behavior of organic cosmetics base on the Theory of Planned Behaviour by Ajzen (1991) with the mediating influence of health value on the attitude - purchase intention relationship. Therefore, it mainly focuses on achieving the following research objectives; 1) investigate whether the purchase intention of organic cosmetics is influenced by attitudes towards organic cosmetics, subjective norm and perceived behaviour control; and 2) investigate whether the relationship between attitudes and purchase intention of organic cosmetics is mediated by the health value.

In the following sections, the paper presents key literature on purchasing behaviour of organic cosmetics and theoretical model of consumer behaviour.

Then develops the main hypotheses and the conceptual model of the study. Next, it presents the methods adopted for the study, discussion of the findings and the conclusion and implications.

2. Literature review

2.1 Emergence of organic cosmetics

The demand for cosmetics will keep growing, fueled mostly by the emerging markets of Asia and Latin America and what will contribute to the creation of new products, shape new spending patterns and perhaps even establish new beauty canons. What is becoming more and more visible in the global market are organic beauty products, those natural cosmetics, manufactured in accordance to the fair-trade philosophy. They emerged from a niche that was previously occupied by a small number of companies and got incorporated into the mainstream market. Those products are now distributed through standard channels such as supermarkets and department stores (Lopaciuk & Laboda, 2013). Modern cosmetics industry uses a wide range of chemicals such as parabens, petrochemicals, sodium lauryl sulfate, artificial colors and preservatives. There is no doubt that long-term exposure to such chemicals may cause many health-related problems, such as cancer, dermatitis and allergies (Nijkamp et al., 2015) therefore a new trend that researchers identified is incorporating sustainability aspects to cosmetic manufacturing. When introducing new products, cosmetics manufacturers are increasingly starting emphasizing that they were produced in a way that was not harmful to the environment whilst their effectiveness remained comparable to their previous versions and in some countries changes in legislation have been put in place to make consumers more informed and to help them distinguish organic and non-organic cosmetics, letting people appreciate their value more (Lopaciuk & Laboda, 2013).

Furthermore, consumers avoiding unwanted exposure to preservatives, synthetic ingredients, hormones and pesticide residues are more likely to use organic cosmetics. Consequently, the demand of organic cosmetics has increased exceptionally (Ferrer et al., 2012). The organic cosmetics are those where the ingredients should be environmentally-friendly, grown without pesticides, synthetic fertilizers, toxic materials, genetically modified organisms or ionizing radiation. Thus, green (organic) cosmetics guarantee environmental conservation all along the production line, a respect for consumers and utilization of natural materials of superior ecological quality for better health (Organic Monitor, 2011). Such products use botanically sourced ingredients and do not contain synthetic chemicals; moreover, they are manufactured in such a way to preserve the integrity of the ingredients. In the global market, Ecocert, the United States Department of Agriculture, the Ethical and Environmental Certification Institute, the Soil Association, CosmeBio, and the Control Union are the leading organic certification bodies (Hsu et al., 2017).

Organic cosmetics are one of the product groups which are comprised of two different categories. One would be colour make up and styling cosmetics which are attributed to luxury products which reflects the status of consumers. The second category would be the personal care products which are attributed to necessity products (Liobikiene & Bernatoniene, 2017). Organic personal care products comprise of skin care, hair care, oral care, colour cosmetics, deodorants, toiletries and feminine hygiene products. They are formulated from agricultural ingredients which are grown without the use of pesticides, synthetic fertilizers, sewage sludge, genetically modified organisms or ionizing radiation, making them more desirable among these green consumers (Organic.org, 2016).

2.2 Theory of planned behaviour

As in the original Theory of Reasoned Action, a central factor in the Theory of Planned Behaviour is the individual's intention to perform a given behaviour. Intentions are assumed to capture the motivational factors that influence behaviour. They are indications of how hard people are willing to try, and of how much of an effort they are planning to exert in order to perform the behaviour.

The theory postulates three conceptually independent determinants of intention. Ajzen (1991) argued that the attitude, subjective norm and perceived behavioural control affect intention, which in turn affect real behaviour. Attitude refers to the degree which the person has a favourable or unfavorable evaluations of the behaviour in question. Subjective norm refers to the perceived social pressure to perform or not to perform the behaviour. If a person believes that his or her referents think that behaviour should be performed, then the subjective norm will influence his or her intention to perform that behaviour.

The novel antecedent of intention, which was not part of the theory of reasoned action, is the degree of perceived behaviour control. Perceived behaviour control refers to the perceived ease or difficulty performing the behaviour and it is assumed to reflect experience as well as anticipated impediments and obstacles. This construct is affected by perceptions of access to necessary skills, resources and opportunities to perform the behaviour. If an individual feel that he or she has control over the situational factors, he or she may develop the intention to perform the behaviour. Therefore, perceived behaviour control influences intention to perform behaviour. Generally, the more favourable the attitude and subjective norm with respect to a behaviour, and the greater the perceived behavioural control will lead to a stronger individual's intention to perform the behaviour under consideration (Ajzen & Driver, 1992).

2.3 Theory of planned behaviour and determinants of purchase behaviour of organic cosmetics

Consumers with different value systems will show different behaviors toward organic cosmetics because one's values, such as important life goals or standards, are guiding principles in one's life (Rokeach, 1973). Also, Schwartz & Blisky (1987) proposed that values are trans-situational goals that serve the interest of individuals or groups and that they act as guiding principles in consumers' lives. Furthermore, values help to shape the judgments people make about the world around them and act as filters or amplifiers with regard to information about threats to objects of value (Liobikiene & Juknys, 2016). Accordingly, values may influence formation of an individual's attitude by guiding him or her to look for objects that will satisfy his or her values (Poortinga, Stec, & Vlek, 2004). Health consciousness guides people to engage in healthy behaviours (Becker et al., 1977). Health conscious consumers care about the desired state of well-being and put forth an effort to maintain a healthy life (Newsom et al., 2005). In the context of organic cosmetics purchases, consumers with high health consciousness may consider whether a product is safe to the skin and body. Therefore, they may be more seriously concerned with the types of ingredients used to make the product than consumers with low health consciousness because health conscious consumer try avoiding conventional cosmetics with chemicals as it can create harmful effects (Johri & Sahasakmontri, 1998; Kim & Seock, 2009). Considering ingredients to be one of the most important product attributes in choosing food and personal care products, which is directly related with human health, thus health value should be the main motivator in purchasing these organic cosmetic products. Therefore, health value should have a mediating impact on purchase intention of organic cosmetics.

Kim and Chung (2011) found a relationship between consumer values and attitudes of buying organic cosmetics. Consumer values such as environmental consciousness, appearance consciousness and health consciousness were tested, and it was found that environmental consciousness and appearance consciousness were significant in attitudes toward organic personal care products than health consciousness. Moreover, the results showed that all predictors of Theory of Planned Behaviour are significantly correlated with purchase intention for organic personal care products. Further, the findings revealed that an individual's experience with other organic products have a significant impact on the purchase intention of organic personal care products which provides evidence that organic lifestyle is reflected in an individual's consumption pattern.

While Kim & Chung (2011) explains that health consciousness was not a significant predictor in determining attitudes towards organic cosmetics, Kim & Seock (2009) found health and environmental consciousness were both significantly related to a respondent's perceived level of knowledge of beauty products and ability to distinguish organic from conventional beauty products. Individuals who are concerned about health and environmental issues are aware that their consumption behaviors have a major impact on health and the environment and thus may actively seek information regarding product attributes that could potentially be harmful to health and the environment. However, some researchers explain that consumers believe that green cosmetics are better for their body and safer than traditional cosmetics and organic cosmetics promote a healthy lifestyle by containing ingredients which are beneficial for body and skin (Rezai et al., 2012; Ghazali et al., 2017). Therefore, the research findings are contradictory as some highlight that health consciousness is not significant, but some explained health consciousness as a significant factor.

Attitude toward behavior refers to personal evaluations being favorable or unfavorable to perform the behavior. According to Ajzen (1985), an individual is more likely to undertake a certain behavior if he or she has a positive attitude toward undertaking the behavior. Numerous studies support the positive relationship between consumers' attitudes and behavioral intentions for green purchasing in different cultures, such as Asian, US, and European, and in different product categories, such as organic foods and timber-based products (Tarkiainen & Sundqvist, 2005). Other scholars found the types of consumers' perceived value on organic personal care products based on past experience, such as hedonic value, health value, safety value and environmental value have a significant positive eff ect on consumer attitude toward re-purchasing organic personal care products. Hedonic value was found to have the strongest influence on attitude compared to health, safety and environmental values (Ghazali et al., 2017).

2.4 Hypotheses of the study

Attitude toward behavior refers to personal evaluations being favorable or unfavorable to perform the behavior. According to Ajzen (1985), an individual is more likely to undertake a certain behavior if he or she has a positive attitude toward undertaking the behavior. Numerous studies support the positive relationship between consumers' attitudes and behavioral intentions for green purchasing in different cultures, such as Asian, US, and European, and in different product categories, such as organic foods and timber-based products (Chan & Lau, 2001; Tarkiainen & Sundqvist, 2005). Therefore, Hypothesis 1 is proposed as follows:

H1: Consumers' attitude toward buying organic cosmetic products will have a positive influence on their purchase intentions to buy organic cosmetics.

Subjective norm reflects one's perceived social pressure to perform a certain behavior. If consumers believe that significant others think organic skin care products are good, consumers will have more intention to buy these products. Subjective norm has a significant effect on behavioral intention in the context of behavior related to skin management (Hillhouse, Turrisi, & Kastner, 2000). Further, a strong relationship between subjective norm and intention has been shown in research on green consumer behavior (Hsu et al.,2017). Therefore, a hypothesis 2 is proposed as follows:

H2: Consumers' subjective norms will have a positive influence on their purchase intentions to buy organic cosmetics.

Perceived behavioral control refers to the degree of control that an individual perceives over performing the behavior (Chen, 2007). Thus, those who perceive a higher degree of personal control tend to have stronger behavioral intention to engage in a certain behavior (Ajzen, 1991). When people believe they have more resources such as time, money, and skills their perceptions of control are high and hence their behavioral intentions increase. Therefore, it is assumed that intention to buy organic cosmetics products is higher when consumers perceive more control over buying these products thus hypothesis 3 is proposed as follows:

H3: Consumers' perceived behavioral control over buying organic cosmetics products will have a positive influence on their purchase intention to buy organic cosmetics.

A study of men's use of grooming products in France revealed that, reducing the ageing process and the maintenance of health were among the factors driving the consumption of these products (Sturrock & Pioch, 1998). Past research has also shown that health benefits such as health preservation and improvement of health are among the predominant motives driving organic consumption (Xie et al., 2015; Yin et al., 2010). The health aspect of organic consumption is often associated with the absence of chemicals, such as pesticides and chemical-based fertilizers, used in agriculture (Xie et al., 2015). Magnusson et al. (2003) also showed that concerns about their own personal and their family health, were the most important factors influencing consumers' attitude towards organic food. Thus, it is highly likely that the perceived health value will have similar relationship with purchase intention of organic cosmetics and in addition health value could be a mediator because it is the main direct motivator to purchase organic personal care products and organic food and it will have an indirect effect in the attitude - purchase intention relationship (Liobikiene & Bernatoniene, 2017) as well and thus the hypothesis is proposed as follows:

H4: Health value mediates the relationship between attitude towards organic cosmetics and purchase intention of organic cosmetics.

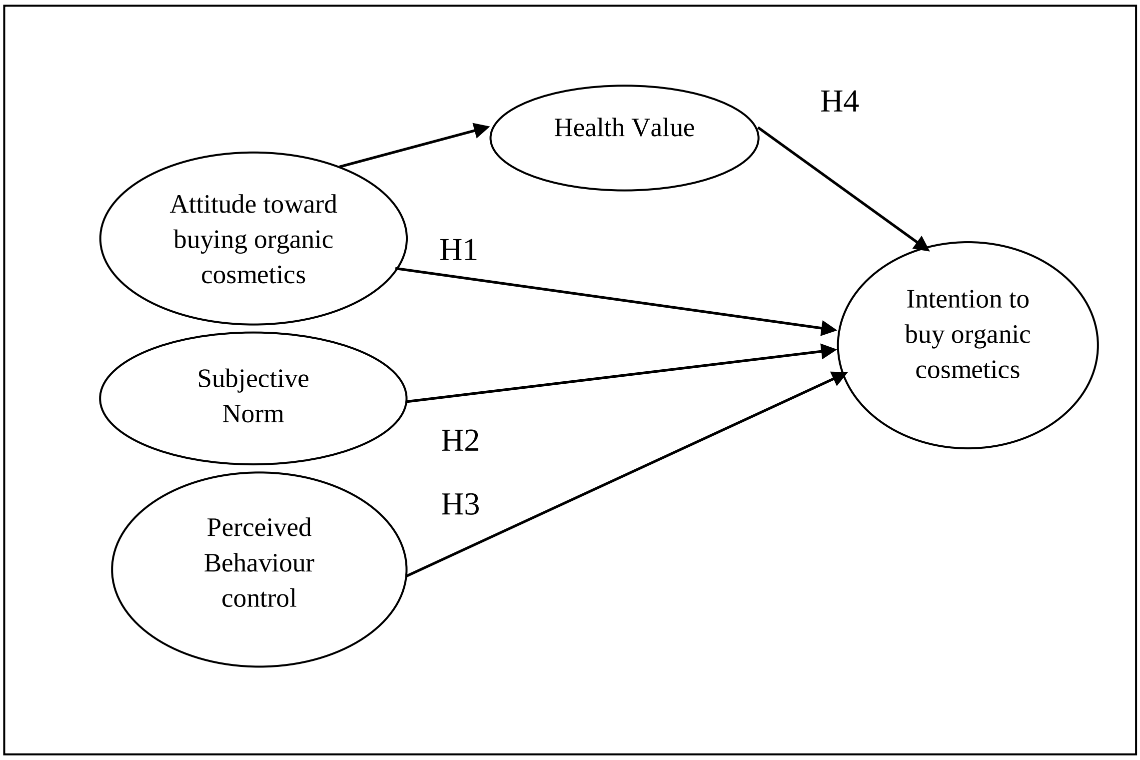

Figure 1: Conceptual model
Source: Researcher's construction

3. Methodology

The proposed study is based on the positivistic paradigm as positivists consider 'facts' as essential building blocks of the scientific knowledge of society. Only facts can be considered as objective representations of actual events in society. Positivists work with observable social reality and the end product of such research can be law-like generalization similar to those produced by natural scientists (Uyangoda, 2015). The purpose of this study is to use the Theory of Planned Behaviour to examine the effect of determinants of purchase intention of organic cosmetics of Sri Lankan consumers. This study aims to consider further the mediating impact of health value on the attitude and intention relationship. Thus, the research approach is suitable would be the positivist paradigm. Due to the main purpose of this study, survey was applied as the most suitable research strategy.

3.1 Operationalization

For the purpose of testing the hypotheses, the study uses the following five major constructs: attitude towards buying organic cosmetics, subjective norm, perceived behavioral control, health value and purchase intention of organic cosmetics. Attitude towards buying organic cosmetics was evaluated using scale items adopted from Ghazali et al. (2017), namely "good idea to buy organic cosmetics than conventional cosmetics", "organic cosmetics are beneficial", " wise move to use organic cosmetics than conventional cosmetics" , " it is pleasant to use organic cosmetics" and " it is desirable to use organic cosmetics". Following the attitudes, all other variables were evaluated using scale items adopted from Ghazali et al. (2017), subjective norm was measured using three scale items namely, "my family members think it is a good idea for me to buy organic cosmetics", "my friends think I should buy organic cosmetics and "people whom I listen to could influence me to buy organic cosmetics. Perceived behavior control was evaluated using three scale items namely, "if organic cosmetics were available, nothing would prevent me from buying them", I completely have control over the purchase of organic cosmetics" and "I believe that I have resources to buy organic cosmetics". Health value was measured using scale items namely, "I believe that organic cosmetics enable me to live healthy", "I am of the view that use of organic cosmetics has a high health promoting effect" and "I believe that organic cosmetics and health conscious life style match well". Purchase intention was measured in terms of respondent's intention engage in organic cosmetics purchase using three scale items.

3.2 Sample and sampling procedure

Unit of analysis of this study is at the individual level as the objective of the study is to investigate the impact of attitudes towards organic cosmetics, subjective norms and perceived behaviour control on purchase intention of Sri Lankan consumers towards organic cosmetics. Cosmetics have been traditionally used by women to control their physical appearance and, presumably, their physical attractiveness. Women are still the salient consumers of cosmetics (Pervin & Ranchhod, 2014). Therefore, the unit of analysis would be females who are between age of 20 to 50, who live in the Western Province of Sri Lanka and sample size is 300 respondents. Sampling technique occupied for the study was purposive sampling which is confined to specific types of people who can provide the desired information, either because they are the only ones who have it (Bryman, 2012). As it is necessary to obtain information from organic cosmetic consumers the most accessible way for the researcher to conduct the questionnaire was adopting purposive sampling. Purposive sampling is suitable in this case as there is no factual data on females using organic cosmetics and it was necessary to collect information only from females who are using organic cosmetics.

3.3 Data collection and analysis

Data was collected using an online questionnaire and from the outlets of the well-known organic cosmetic brands which were located in major shopping malls where most of the organic cosmetic consumers buy their products. The structured questionnaire comprised of 18 questions to measure the five constructs basically four constructs based on Theory of Planned Behavior and health value. In addition to these questions, four questions were incorporated to gain a general understanding of the participants in the form of age, income, educational qualification and frequency of purchase of organic products. All questions have been borrowed from international and reputed journals and first 18 questions are measured in a seven-point Likert scale where 1 represented strongly disagree and 7 represent strongly agree (Ghazali et al., 2017). In performing the statistical analysis of the gathered data, the statistical package for Social Science (SPSS version 22) was applied. The statistical analysis for this study comprises correlation analysis in addition to the reliability test. In this study, four linear regressions were conducted respectively.

First, multiple regression was conducted to test the relationship between the three factors mainly attitudes towards organic cosmetics, subjective norm, perceived behaviour control and the purchase intention towards organic cosmetics. Second, two simple regression analysis and one multiple regression analysis along with Sobel Test was conducted for testing mediation.

4. Data analysis and presentation

4.1 Respondents demographic profile

Table 1: Age and education of the respondents

Age of the respondents	Percentage of sample	Education	Percentage of sample
20 to 25 years	17%	Secondary	10%
26 to 41 years	58%	Education	35%
42 to 51 years	25%	Diploma	40%
		Bachelor's degree	15%
		Postgraduate	

Source: Researcher's construction

According to table 1, most of the respondents were highly educated. Moreover, the survey also collected the frequency of purchase of organic products from the respondents, the majority (n=215) purchased organic products less than once in a month. A total of 47 respondents were regular purchasers of organic products 1-2 times in a month and 38 respondents bought organic products more frequently which was more than 2-5 times a week.

4.2 Reliability and validity of measures

Before conducting the large-scale questionnaire survey, a pilot study was carried out with 30 organic cosmetics female consumers to confirm the reliability of the constructs. Cronbach's alpha was calculated to measure the reliability and internal consistency of the measurement scales. The attitude construct (5 items) had a Cronbach's alpha of 0.792; the construct, subjective norm (3 items) had a Cronbach's alpha of 0.748 ; perceived behaviour control construct (3 items) had a Cronbach's alpha of 0.522; purchase intention construct (3 items) had a Cronbach's alpha of 0.682 and health value (3 items) construct had a Cronbach' alpha of 0.844. Moreover, before running the Multiple Regression analysis, factor analysis was done in order to test the internal consistency of latent variables. According to Hair et al. (2016), outer loading reflecting indicator reliability should be higher than 0.708. Table 2 presents all the outer loadings, ranging from 0.760 to 0.932, confirming the reliability of all measurement indicators. In addition, all the Average Variance Extracted (AVE) values exceeded 0.50. An AVE value of at least 0.50 indicates that a latent variable is on average able to explain more than half of the variance of its indicators (Hair et al., 2016). Thus, the measurement model achieved an adequate and satisfactory convergent validity. Furthermore, the square root of AVE is consistently greater than the corresponding correlations, thus suggesting the evidence for good discriminant validity for all constructs (Fornell & Larcker, 1981).

Table 2: Construct and indicators

Construct	Item	Outer Loadings	AVE	Square root of AVE
Attitudes	AT 1	0.841	0.676	0.822
	AT 2	0.879		
	AT 3	0.818		
	AT 4	0.809		
	AT 5	0.760		
Subjective Norm	SN 1	0.868	0.757	0.870
	SN 2	0.882		
	SN 3	0.860		
Perceived Behaviour Control	PBC 1	0.835	0.751	0.866
	PBC 2	0.891		
	PBC 3	0.873		
	PI 1	0.794	0.747	0.864
Purchase Intention	PI 2	0.895		
	PI 3	0.900		
	HV 1	0.883	0.828	0.910
Health Value	HV 2	0.932		
	HV 3	0.915		

Source: Researcher's construction

4.3 Association between key constructs

Table 3: Descriptive Statistics and Pearson correlation coefficients

Variable	Min	Max	Mean	SD	1	2	3	4	5
1.AT	11.46	23.70	21.34	2.613	-				
2.SN	2.27	15.90	12.36	2.597	.587				
3.PBC	5.17	15.77	13.11	2.236	.713	.618			
4.PI	4.65	15.68	13.22	1.983	.680	.655	.781		
5.HV	5.46	19.11	16.95	2.486	.720	.566	.661	.660	

Notes: N=300 p<0.01
Source: Researcher's construction

Correlation analysis aims at ensuring the construct validity by measuring how well two sets of data were related. It can be presented by the value of Pearson's correlation coefficient. In general, if the correlation value is under 0.8 or 0.9, validity is ensured. In this study, all the values were under 0.8 which indicated that the two sets of concepts are not highly related. In other words, these concepts measured differently. Furthermore, all the variables accounted have a significant linear relationship and the direction of the relationship is positive, meaning these variables tend to increase together.

4.4 Test of hypotheses

In testing the two hypothesized relationships in the conceptual model, the multiple regression analysis revealed the following results as shown in the Table 4.

Table 4: Multiple regression analysis predicting purchase intention of buying organic cosmetics

Model	R	R square	Adjusted R square	F change	df 1	df 2	Sig	Durbin Watson
1	0.820	0.673	0.669	202.7	3	296	.000	1.636

Table 5: Statistical output of the multiple regression analysis

Model	Unstandardized Coefficients B	Std error	Standardized Coefficient Beta	T	Sig	Collinearity statistics Tolerance VIF
Constant	2.171			4.000	.000	
AT	.543		.181	3.682	.000	.457
SN	.138		.237	5.398	.000	2.189
PBC	.037		.505	9.963	.000	.574
	.181					1.742
	.034					.430
	.448					2.323
	.045					

Source: Researcher's construction

To test the relationship between purchase intention of organic cosmetics and the predictors such as attitude towards buying organic cosmetics, subjective norm and perceived behavior control (H1-H3), standard multiple regressions analysis was performed. All the independent variables of the Theory of Planned Behavior were entered into equation simultaneously. The multicollinearity measured by Variance Inflation Factor (VIF) was between 1 and 2.323 and indicated that no multicollinearity existed among the independent variables. The normal probability (P-P) plot of the regression standardized residual data points are on the diagonal line with minimum deviations suggesting that there are no major deviations from normality. Further, case wise diagnostics are less than 1 percent outside the normal range.

Therefore, all the assumptions are met to conduct the standard multiple regression analysis.

According to the results presented in table 4, the model explains 67.3 % of the variance in purchase intention of organic cosmetics. The regression model predicated purchase intention from attitude towards buying organic cosmetics, subjective norm and perceived behaviour control was statistically significant, F (3,296) = 202.7, $p < .001$, $R^2 = 0.673$. According to the results presented in Table 5, attitude towards organic cosmetics positively influenced the purchase intentions ($\beta = .181$, $p < .001$) and the result is significant, meaning attitude towards organic cosmetics made a statistically significant contribution to the equation, thus H1 is fully supported. Subjective norms also positively influence the purchase intentions ($\beta = .237$, $p < .001$) and the result is significant thus H2 also can be fully supported. Furthermore, perceived behaviour control positively influenced the purchase intentions of organic cosmetics ($\beta = .505$, $p < .001$) and the result is significant, therefore, H3 is also fully supported. Perceived behaviour control had the largest standardized coefficient means perceived behaviour control makes the strongest unique contribution in explaining the purchase intention of organic cosmetics in the Sri Lankan context.

Data analysis of the mediating hypothesis testing will investigate the impact of the mediator on the relationship between independent variable and dependent variable. Data is analyzed based on Baron and Kenny's (1986) three step mediation analysis and further confirmed by Sobel's Test (1982). Therefore, for data analysis purpose the results are demonstrated based on the three steps given by Baron and Kenny (1986) to arrive at the outcome for the mediation analysis.

Condition 1: The independent variable should significantly affect mediator.

Table 6: Model summary of the independent variable (attitude) predicting the mediating variable (health value)

Model	R	R square	Adjusted R square	F change	df 1	df 2	Sig
1	0.748	0.560	0.559	374.5	1	294	.000

Table 7: The coefficients of the independent variable (attitude) predicting the mediating variable (health value)

Model	Unstandardized Coefficients		Standardized Coefficient	t	Sig
	B	Std error	Beta		
1. AT	0.693	0.036	.748	19.35	.000

Source: Researcher's construction

Results in the first step according to Table 6 which is the path 'a' of the mediation, the regression of attitude towards buying organic cosmetics and the health value was significant, b = 0.693, t (1,294) = 19.35 and $p < .001$.

Furthermore, overall model was significant and attitude towards buying organic cosmetics explained 56% of the variance in health value. Therefore, attitudes regress significantly on health value thus the first condition set by Baron and Kenny's (1986) mediating analysis is satisfied.

Condition 2: The independent variable significantly affects the dependent variable in the absence of the mediator.

Table 8: Model summary of the independent variable (attitude) predicting dependent variable (purchase intention)

Model	R	R square	Adjusted R square	F change	df 1	df 2	Sig
1	0.698	0.487	0.485	278.79	1	294	.000

Table 9: Coefficients of the independent variable (attitude) predicting dependent variable (purchase intention)

Model	Unstandardized Coefficients B	Std error	Standardized Coefficient Beta	t	Sig	Collinearity statistics Tolerance	VIF
1. AT	0.543	0.033	.698	16.69	.000	1.000	1.000

Source: Researcher's construction

Results of the second step according to Table 8, which is also known as the path 'c' of the mediation analysis was found to be significant, $p < 0.001$, F (1,294) = 278.79. Overall, the attitude towards buying organic cosmetics explained 48.7% of variance in purchase intention. The regression of the attitude and purchase intention was also significant b = 0.543, t (1,294) = 16.69 and p = <0.001. Therefore, the second condition of the mediation analysis was also satisfied.

Condition 3: The mediator has a significant unique effect on the dependent variable and the effect of the independent variable shrinks upon the addition of the mediator variable

Table 10: Model summary of the independent variable (attitude) and mediating variable (health value) predicting the dependent variable (purchase intention)

Model	R	R square	Adjusted R square	F change	df 1	df 2	Sig
1	0.723	0.523	0.520	160.52	2	293	.000

Table 11: Coefficients of the independent variable (attitude) and mediating variable (health value) predicting the dependent variable (purchase intention)

Model		Unstandardized Coefficients		Standardized Coefficient	t	Sig	Collinearity statistics Tolerance
		B	Std error	Beta			VIF
1.	AT	0.376	0.047	.483	7.94	.000	.444 2.274
	HV	0.241	0.051	.287	4.70	.000	.444 2.274

Source: Researcher's construction

Table 12: Output from Preacher's online Sobel Test

Input		Test Statistics	Standard error	p-value
a 0.693 b 0.241 sa 0.036 sb 0.051	Sobel test	4.58923808	0.03639232	0.00000445

Source: Researcher's construction

Results of the third step according to Table 10, indicate that the overall model which is attitude towards buying organic cosmetics and health value together predicts purchase intention of organic cosmetics was significant, F (2.293) = 160.52, $p < .001$ and both attitude towards organic cosmetics and health value explained 52% variance in purchase intention of organic cosmetics. The mediator (HV) predicting independent variable (PI) which is known as path 'b' in the mediation analysis, controlling for the attitude towards buying organic cosmetics was significant b = 0.241, t (2,293) = 4.70, $p < .001$. The path c' of mediation analysis revealed that controlling for the mediator (HV), attitudes towards buying organic cosmetics were still a significant predictor of purchase intention of organic cosmetics but it has lessened, b = 0.376, t (2,293) = 7.9, $p < .001$ which is demonstrated in Table 11. It was noticed that health value is a significant predictor of purchase intention of organic cosmetics and attitudes towards buying organic cosmetics. Attitudes towards buying organic cosmetics which was previously a significant predictor by itself, is now reduced in its strength as a predictor. According to the definition of Baron and Kenny (1986) mediation occurs when a variable has mediated the relationship between two other variables when the basic relationship is reduced when the mediating variable is included in the regression equation. According to the Sobel Test (1982) which is shown in Table 12, the results obtained a p value of less than 0.05 meaning that the study has obtained a statistically significant mediation. This can be explained as a partial mediation because attitudes towards buying organic cosmetics as the independent variable exerts some of its influence on the purchase intentions of organic cosmetics as the dependent variable and not through the mediating variable which is the health value. Therefore, H4 is accepted.

However, the researchers should not only consider the statistical significance of the mediation but also the size of a given effect. The size of the indirect effect would be 0.167 (path a x path b). The strength of the indirect effect can be assessed using ratio and proportion measure which is a measure suggested by MacKinnon (2008). The indirect / total ratio computed based on unstandardized coefficients refers to 0.167/0.543 = 0.307 which explains 31% of the original relationship among attitudes and purchase intention is explained by the indirect effect.

5. Discussion of the findings

Turning first to the findings of the relationship between attitudes, subjective norm, perceived behaviour control and purchase intention of organic cosmetics, the results showed that all Theory of Planned Behaviour predictors are significantly correlated with purchase intention of organic cosmetics. Attitude towards the behaviour refers to the level at which a person has a positive or negative evaluation or assessing of the behaviour. The more positive the attitude is in regard to behaviour, the stronger is the individual’s intention to perform the behaviour under consideration (Tarkiainen & Sundqvist, 2005). This result is in line with classical attitude-behaviour theory (Azjen, 1991) and previous studies, such as Kim and Chung (2011) who stated that the attitude toward organic cosmetics had a direct, positive and relatively strong relationship with organic cosmetic consumption. In this study, attitudes towards buying organic cosmetics was found to be making a statistically significant contribution in explaining the purchase intention of organic cosmetics. Thus, Sri Lankan consumers have a positive attitude towards buying organic cosmetics.

Considering the next predictor of purchase intention of organic cosmetics according to the Theory of Planned Behaviour is the subjective norm which can be explained as the perceived social pressure to perform or not to perform the behaviour (Hsu et al., 2017). In this study, subjective norm was found to be making a statistically significant contribution in explaining the purchase intention of organic cosmetics. This is consistent with the findings of previous research based on the Theory of Planned Behaviour. This is consistent with the findings that subjective norms are positively related to purchase intention of organic food (Chen, 2007; Teng & Wang, 2015) and organic cosmetics (Kim & Chung 2011; Hsu et al., 2017). In a collectivist society such as Sri Lanka, peers, family and reference groups play an important role in purchase behaviour of organic cosmetics. Therefore, the level of influence imposed by reference groups such as family, friends and colleagues for instance usually occurring during the initial purchase choice and decision-making stages would be high (Hsu et al.,2017). In the Sri Lankan context, they will be the opinion leaders who provide reference on organic cosmetic brands as opposed to conventional cosmetics.

Perceived behaviour control as a predictor of the purchase intention of organic cosmetics has a significantly positive relationship between consumer attitudes and purchase intentions of organic cosmetics. These findings are in line with previous research (Kim & Chung 2011; Hsu et al.,2017; Ghazali et al.,2017). Perceived behaviour control refers to the possession of resources, abilities and opportunities that a person believes he or she has in order to perform a particular behaviour. This factor, compared to a person's attitude toward performing a specific behaviour and subjective norm, not only affects the behavioural intentions but also the actual behaviour (Ajzen & Fishbein, 1980). Madden, Ellen, and Ajzen (1992) affirmed that perceived behaviour control motivates an individual's behavioural intentions, as well as actual behaviour. The study results showed that perceived behaviour control had the highest standardized beta coefficient in the model thus it makes a unique and the strongest contribution in explaining the purchase intention of organic cosmetics. This is a positive indication because unlike attitudes towards buying organic cosmetics and subjective norm, perceived behaviour control affects not only affect the purchase intention of organic cosmetics but also the actual behaviour as explained in previous literature. It is important that consumers have more time to purchase organic cosmetics because they should spend some time searching information about the product ingredients, manufacturers sourcing policy, animal testing and evaluating it on their skin types. Thus, a higher degree of perceived behaviour control means consumers will have higher intention to purchase organic cosmetics.

Health conscious consumers care about the desired state of well-being and put forth an effort to maintain a healthy life (Newsom et al., 2005). They are mostly interested in organic or natural ingredients without the presence of chemicals. The findings of this study affirmed the suggestion made by Liobikiene and Bernatoniene (2017) that future research should focus testing health value as a mediator as health value will have an indirect effect on the attitude and purchase intention relationship. The results showed that if a consumer experiences a positive attitude towards organic cosmetics, it is likely to result in a greater purchase intention of organic cosmetics. This relationship can be partially explained by detailing the involvement of health value. In essence, consumers who reported positive attitudes towards organic cosmetics reported more health consciousness and in turn health conscious consumers reported higher levels of purchase intention of organic cosmetics.

6. Conclusion and contributions

6.1 Key findings of the study

Key findings of the study include that attitudes towards organic cosmetics, subjective norm and perceived behaviour control have a positive and significant relationship with the purchase intentions of organic cosmetics. All three predictors of the Theory of Planned Behaviour made statistical contribution in explaining the purchase intention of organic cosmetics. The model explained 67.3% of variance in explaining the purchase intentions of organic cosmetics. Moreover, health value partially mediates the relationship between attitudes towards buying organic cosmetics and purchase intentions of the organic cosmetics. 31% of the original relationship among attitudes towards buying organic cosmetics and purchase intention of organic cosmetics is explained by the indirect effect.

6.2 Theoretical implication

This study provides a theoretical framework for understanding consumer purchase intention of organic cosmetic products in Sri Lanka. Specifically, this study contributes to our understanding for the first time and interestingly found that the relationship between attitudes and purchase intention of organic cosmetics is partially intervened by health value. This study extended the Theory of Planned Behaviour model by including constructs that are important in organic context, such as health value and contributing to the present knowledge that health value could be a mediator and thus have an indirect effect explaining purchase intention of organic cosmetics. This finding is also consistent with the suggestion made by Liobikiene & Bernatoniene (2017) that future research should test health value as a mediator in attitude purchase intention relationship. Adding these constructs to the model has improved the ability to predict intention and understanding of the decisions of organic cosmetic consumers thus contributing new knowledge to the literature of organic cosmetics purchase behaviour, where the purchase intentions are explained using the Theory of Planned Behaviour.

6.3 Managerial implications

The present study provides several suggestions for Marketing Managers and Brand Managers of organic cosmetics companies. Firstly, this study found that attitude toward organic personal care products, subjective norm, and perceived behavioral control have a significant and positive impact on purchase intention of organic cosmetics. Thus, to increase consumers' purchase intention toward organic cosmetics, marketers can use marketing communication via various channels, such as television, social media, magazines, or the internet to transmit product messages and further evoke their positive attitude toward organic cosmetics. In numerous past studies, researchers have confirmed that consumers' attitude significantly and positively affected their purchase intention.

Furthermore, subjective norm also had a significant and positive impact on purchase intentions of organic cosmetics. It is vital to evoke positive word of mouth or viral marketing campaigns among the consumers to spread the information about organic cosmetics and its benefits through consumer testimonials. This would attract more consumers who are using cosmetics but unaware about the benefits of organic cosmetics to purchase organic cosmetics and to ultimately improve sales of organic cosmetics. Moreover, as discussed earlier perceived behaviour control made the unique and strongest contribution in explaining the purchase intention of organic cosmetics. Therefore, Sri Lankan consumers will buy organic cosmetics if it is more available. Therefore, marketers should make effort to cover all the consumer touch points so that they can make available their products for them to buy.

Additionally, the study found that health value partially mediates the relationship between attitudes towards organic cosmetics and the purchase intentions. This suggests that Sri Lankan consumers are considering the ingredients as an important attribute in choosing organic cosmetics, which is directly related with human health. Health value was important when purchasing organic food according to previous researches and this study confirms that not only consumers purchase organic food because its healthier than conventional food due to less chemicals residue also they are concerned about what they apply for their skin thus health conscious consumers will have more strong and positive intention to purchase organic cosmetics than conventional cosmetics. Therefore, this study provides an important guidance to brand managers when deciding their brand plans regarding organic cosmetics. Their integrated marketing communication plan should speak in one voice, communicating the health benefit of their organic cosmetics, educating the consumers about the natural ingredients they use in their products and its health benefits. Therefore, positioning on "health and wellness" will give organic cosmetics manufactures a positive response from the consumers and also a competitive edge over its conventional cosmetics sellers.

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