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Scale Development for M-Commerce Acceptance vis-à-vis Young, Educated, Non-Metropolitan Small Town Consumers in India

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Abstract

The primary aim of the present study was to develop a validated measuring scale for m-commerce acceptance among educated young people in non-metropolitan India. Data was generated from students enrolled in higher educational institutions located in Aligarh district in Uttar Pradesh employing a close-ended structured questionnaire. Analysis utilized Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). Based on findings, the study proposes Mobile Commerce (MC) scale for measuring the level of m-commerce acceptance by Indian consumers. MC scale comprise of four factors, namely, utility, perceived ease of use, perceived innovation in information technology and intention to use. Findings also revealed that the educated young Indian consumers of non-metropolitan cities are ambitious and choose innovativeness over cost and risk for using new technology. On a broader note, it can be proposed that educated youth of non-metropolitan India resemble their global counterparts through relying more on positive factors than negative factors such as cost and risk.

***Keywords*:** Educated Youth, Indian Consumers, M-commerce, Non-metropolitan Area, Scale Development

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Introduction

Mobile commerce (M-Commerce), is a subset of electronic commerce (e-commerce) that involves the use of mobile device for online transaction of commodities, services and information (Clarke, 2008; Feng et al., 2007; June, 2014; Varshney & Vetter, 2002; Wong & Hsu, 2008; Wu & Wang, 2005). Due to features such as mobility, reachability, usage patterns and different interaction styles, m-commerce provides an innovative model for investing, banking, shopping, and other services (Eastin, 2002; Mohsin et al., 2003; Tiwari & Buse, 2007; Wei et al., 2009). There has been a rapid expansion in the use of mobile internet services across the globe (Lu et al., 2003; Lu et al., 2005; Yang et al., 2004). This is evident in the increased number (from 95 million in 2003 to 5.2 billion in 2019) of global mobile subscribers (GSM Association (GSMA), 2020). According to the estimations of a report by GSMA (2020), the number of global mobile subscribers will reach 5.8 billion by 2025.

GSMA (2020) also posited that the future growth in the mobile internet services will be driven by developing countries such as India. The sales through m-commerce in India was around 6 billion US dollars in the financial year 2015-2016 (Statista.com, 2016). In 2017, it was observed in a study by the Associated Chambers of Commerce and Industry (ASSOCHAM) in India that, mobile phones were the preferred device to be used by most Indian consumers for online shopping (Press Trust of India, 2017). The number of mobile subscribers is expected to further increase in future due to offering of a wide range of activities such as health care, agricultural extension services, genomics, advanced geographic information system, etc. (McKinsey Global Institute, 2014). According to McKinsey Global Institute (2014), there will be around 900 million mobile internet users in India by 2025. The annual sales are, in fact, expected to reach 38 billion US dollars by 2020 (Statista.com, 2016).

On one hand, m-commerce offers benefits such as efficiency, convenience, wider selection options and rich information (June, 2014). The researchers have highlighted effectiveness of m-commerce in shopping, banking services, easy payment options, etc. (Chong et al., 2012; Eastin, 2002; June, 2014; Tiwari & Buse, 2007; Wei et al., 2009). On the other hand, there are some concerns related to m-commerce such as cost, privacy issues and risk (Plouffe et al., 2001). These concerns can have a bearing on the consumer intention to embrace m-commerce (Hung et al., 2012). Due to this, it is imperative for marketers to have a clear understanding of the factors that could stimulate consumers for the acceptance of mobile commerce. In this regard, previous researchers have identified several factors such as perceived ease of use, perceived

cost, perceived usefulness, compatibility, perceived risk, intention to use etc. for predicting consumer acceptance of mobile commerce (Choi, 2018; Chou et al., 2010; June, 2014; Kim et al., 2009; Liébana-Cabanillas et al., 2017; Wu & Wang, 2005).

In the Indian context, it should be noted that a large population is living in the non-metropolitan part of the country (Ministry of Home Affairs, 2011; Lu et al., 2016). Non-metropolitan population includes those who reside in small towns and villages where the population is less than four million (Ministry of Home Affairs, 2011). The earlier studies have suggested that the Indian consumers residing in small towns and villages are not confortable with the new technologies. They are observed to be reluctant in embracing new technologies as they not only consider these technologies risky but are also skeptical about their abilities to use new technologies (Chauhan, 2015; Thakur & Srivastava, 2013; Trivedi & Kumar, 2014; Yadav et al., 2016). Further, cost is also an issue for the non-metropolitan consumers since a majority of these consumers lives on a medicore income and spending extra for using a new technology is a major issue for them (Chauhan, 2015; Thakur & Srivastava, 2013; Trivedi & Kumar, 2014; Yadav et al., 2016). This suggests that the factors such as perceived risk, perceived ease of use, perceived cost, etc. could be very crucial for influencing them to embrace a new technology such as mobile commerce.

Past studies based on feedbacks from consumers residing in metropolitan cities in India have identified the factors crucial for acceptance of a new technology by consumers. For example, Thakur and Srivastava (2013) identified that factors such as perceived usefulness and perceived ease of use are important determinants of intentions of Indian consumers to embrace m-commerce. Similarly, Yadav et al. (2016) examine the variables such as perceived cost, perceived trust, social influence and variety of services in the context of m-commerce acceptance by Indian consumers. Other researchers such as Trivedi and Kumar (2014) and Chauhan (2015) have also attempted to examine different dimensions associated with the m-commerce acceptance by Indian consumers. In the global context too, the observations are largely based on the feedback generated from consumers residing in the national capitals or metropolitan cities (Chong et al., 2012; Chou et al., 2010; Eastin, 2002; June, 2014; Kim et al., 2009; Liébana-Cabanillas et al., 2017; Tiwari & Buse, 2007; Wei et al., 2009; Wu & Wang, 2005).

Recent studies have suggested that the small towns are offering a great potential for the promotion of m-commerce in India (Bali, 2016; Kalaari Capital Report, 2017). In this regard, the primary challenge for marketers is the fundamental understanding of non-metropolitan Indian consumers who are considered to be different from

metropolitan consumers (Maheshkar et al., 2018). Presently, a well defined scale determining m-commerce acceptance by the non-metropolitan Indian consumers is missing. Thus, there was a pressing need to examine the preferences of Indian consumers residing in non-metropolitan part of the country. Hence, the primary aim of the present study was to develop a validated measuring scale for m-commerce acceptance among educated young people in non-metropolitan India.

Literature review

There are several studies that examined the consumer acceptance of new technologies. Most widely refered research is the study by Davis (1989) in which he proposed the Technological Acceptance Model (TAM). TAM was developed based on the theoretical foundations of Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). While TRA explained general human behaviour, TAM was more focused on explaining the determinants of technological acceptance. According to TAM, perceived ease of use and perceived usefulness are the antecedents that helps in developing attitude towards technology, behavioural intention and hence, leads to actual usage (Wallace & Sheetz, 2014; Wijesundara & Xixiang, 2018). The observations by Davis (1989) found support in a significant number of later studies. For example, the researchers such as Lederer et al., (2000) and Jeyaraj et al. (2006) opined that perceived usefulness is crucial to explain consumer acceptance of a new technology. In the context of m-commerce too, researchers have reiterated that the perceived usefulness is critical to understand the consumer acceptance (Chou et al., 2010; Hung et al., 2007; Kim et al., 2009; Liébana-Cabanillas et al., 2017; Lin & Shih, 2008; Lu et al., 2005; Taylor & Strutton, 2010). Similarly, researchers also supported the crucial role of perceived ease of use in explaining technological acceptance by consumers (Choi, 2018; Choi et al., 2011; Chong et al., 2012; Ha et al., 2007; June, 2014; Kim et al., 2009; Lederer et al., 2000; Liébana-Cabanillas et al., 2017; Liu & Forsythe, 2011; Nysveen et al., 2005; Sadia, 2011; Taylor & Strutton 2010; Zhou, 2011).

Researchers have also proposed the extension of TAM by integrating new variables in order to incorporate the latest trends (Akter et al., 2011; Kim, 2012; Lucas & Spitler, 2000; Ng & Kwahk, 2010; Szajna, 1996; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000; Wei et al., 2009). In this regard, TAM was revised into TAM2 (Venkatesh & Davis, 2000) and TAM3 (Venkatesh & Bala, 2008). TAM2 included social influence and cognitive instrumental processes and TAM3 examined the antecedents of perceived ease of use (Rondan-Cataluna et al., 2015; Wijesundara & Xixiang, 2018). However, in a recent study, June (2014) observed a weak link

between social influence and consumer decision to accept a new technology. It should also be noted that TAM2 omitted 'attitude' as it was observed to be a weak predictor of intention and actual usage (Venkatesh & Davis, 2000; Wu & Wang, 2005). TAM was also modified by a significant number of other researchers (Choi, 2018; Chong et al., 2010; Chou et al., 2010; Hsu & Lu, 2004; Jeyaraj et al., 2006; June, 2014; Lederer et al., 2000; Lu et al., 2005; Taylor & Strutton, 2010; Venkatesh & Davis, 2000; Wei et al., 2009; Wu & Wang, 2005).

In the context of mobile commerce, Wu and Wang (2005) developed the extended TAM that integrated innovation diffusion theory, perceived risk and cost in the original TAM. With reference to cost, Grandon and Pearson (2004) identified three components – cost of equipment, transaction cost and access cost for using a technology. In addition, consumers also incur additional cost due to slow connections, out-of-date content, poor quality, errors and missing links (Wu & Wang, 2005). With regard to perceived risk, researchers opined that safety concern of consumers is critical for their decision to accept a new technology (Gefen & Straub, 2003; Lin & Chen, 2012; Moorman et al., 1992; Suh & Han, 2002; Sultan & Mooraj, 2001;Taylor, 1974; Warrington et al., 2000; Zhou, 2011; Zhao et al., 2012). More specifically, the usage of a technology involves privacy and security risks that may lead to fraud and loss for consumers (Ba & Pavlou; 2002; Bagozzi & Yi, 1998; Cho, 2004; Forsythe & Shi, 2003).

Researchers have also examined the role of consumer innovativeness in explaining the technological acceptance by consumers (Aldas-Manzano et al., 2009; Han et al., 2006; Hung et al., 2007; Kwon et al., 2007; Lu et al., 2005; Sun, 2012; Wu, et al. , 2011; Yi et al.., 2006; Zhao et al., 2012). Agarwal and Prasad (1998) posited that the adoption of a new technology is dependent upon the degree of innovativeness among the consumers. June (2014) observed the critical role of personal innovativeness in explaining consumer intention to accept mobile commerce.

Some important constructs discussed in the previous research are available in Table 1. The factors examined by the previous researchers can be classified into two groups. First, there are constructs that can motivate consumers to accept a new technology. These constructs such as perceived ease of use, perceived usefulness, personal innovativeness and intention can be termed as positive factors. Other factors such as perceived risk and cost tend to deter the consumers from accepting a new technology, and hence, they can be termed as negative factors. A significant number

of earlier studies focus on examining the positive factors only (Choi, 2018; Chong et al., 2010; Chou et al., 2010; Davis, 1989; Hsu & Lu, 2004; Jeyaraj et al., 2006; June, 2014; Lederer et al., 2000; Lu et al., 2005; Taylor & Strutton, 2010; Venkatesh & Davis, 2000; Wei et al., 2009; Wu & Wang, 2005). Only Wu and Wang (2005) examined the combination of positive and negative factors. However, Wu and Wang (2005) have examined only the compatibility aspect of personal innovativeness. In the Indian context, Trivedi and Kumar (2014) examined only positive factors to understand the technological acceptance by consumers. Thakur and Srivastava (2013) considered the perceived risk but did not examine cost in their technological acceptance model. The cost of using a technology was examined by Yadav et al. (2016) but they did not examine the risk factor in their study. In sum, there is an absence of a study examining all positive and negative factors together in determining consumer acceptance of a new technology.

Table 1: Important Constructs Discussed in Previous Research

Construct	Definition	Studies
Perceived ease of use	Degree of consumer belief that using a particular product is free from efforts	Davis, 1989; Ledererer al., 2000; Nysveen et al., 2005; Ha et al., 2007; Kim et al., 2009; Sadia, 2011; Liu & Forsythe, 2011; Zhou, 2011; Chong et al., 2012; June, 2014; Liébana-Cabanillas et al., 2017
Perceived usefulness	Degree of consumer belief that using a particular product would increase his effectiveness	Davis, 1989; Lederer et al., 2000; Venkatesh & Davis, 2000; Hsu & Lu, 2004; Lu et al., 2005; Wu & Wang, 2005; Jeyaraj et al., 2006; Wei et al., 2009; Chong et al., 2010; Chou et al., 2010; Taylor & Strutton, 2010; June, 2014; Liébana-Cabanillas et al., 2017; Choi, 2018.
Percieved risk	Customer's perception of lack of trust and the potential adverse effects of purchasing a good or service	Taylor, 1974; Moorman et al., 1992; Warrington et al., 2000; Sultan & Mooraj, 2001; Gefen & Straub, 2003; Bagozzi, 1998; Ba & Pavlou, 2002; Forsythe & Shi, 2003; Suh & Han, 2002; Zhou, 2011; Lin & Chen, 2012; Zhao et al., 2012.
Perceived cost	The unit cost that a consumer believes he incurs while using a technology.	Dai &Palvia, 2008; Wei et al., 2009; Wu & Wang, 2005; Lu et al., 2016.

Construct	Definition	Studies
Innovativeness in Information Technology	An indicator of the degree of risk tolerance among consumers and their confidence to use a new technology.	Agarwal & Prasad, 1998; Lu et al., 2005; Kwon et al., 2007, Han et al., 2006; Yi et al., 2006; Hung et al., 2007; Aldas-Manzano et al., 2009; Wu et al., 2011; Sun, 2012; Zhao et al., 2012; June, 2014.
Intention to use	The consumer likelihood to accept a technology	Wu & Wang, 2005

In this regard, it is imperative to understand whether the cost and risk are important considerations for non-metropolitan contexts such as what is found in India (Dai & Palvia, 2008; Wei et al., 2009). According to Kumar (2007), Indian consumers in small towns and villages are cost consicious and prudent while making acceptance decisions. This is also supported by Maheshkar et al. (2018) in their assertion that unlike urban consumers, the non-metropolitan Indian consumers are driven by their needs and income. Chauhan (2015), in a study based on poor Indian citizens, opined that the chances of technological acceptance by consumers increase when they feel safe about using the technology.

It is in light of these drawbacks of currently available measurement instruments that this paper seeks to develop a more suitable scale for m-commerce acceptance among educated young people in non-metropolitan India.

Research methodology

The present study followed the procedures suggested by earlier studies such as Churchill (1979), Hinkin (1995), Tanwar and Prasad (2017) and Ahmad and Khan (2017) for the purpose of scale development.

Item Generation

The items to measure perceived ease of use, perceived usefulness and intention were used in various studies on technological acceptance model (Davis, 1989; Hsu & Lu, 2004; Lederer et al., 2000; Lu et al., 2005; Venkatesh & Davis, 2000). These items were refined by Wu and Wang (2005), Chong et al. (2012) and June (2014) in the context of mobile commerce. Further, Wu and Wang (2005) also used the perceived risk and cost to measure consumer acceptance of mobile commerce. June (2014) comprehensively measured personal innovativeness of consumers in connection with the acceptance of mobile commerce. Hence, the items for the present

study were adapted from the studies by Wu and Wang (2005), Chong et al. (2012) and June (2014). Table 2 indicates the sources of individual items. These items were measured based on a 5-point likert scale.

For the purpose of pre-testing, 10 academicians from a reputed university funded by the central government of India and located in the northern region of the country were consulted (as recommended by Hinkin, 1995). They were requested to check the questionnaire items for relevance, wording, ease of understanding and other inconsistencies. These academicians were of the view that the language of some items can be more simplified to make them more relevant in the Indian context. Based on their suggestions, those items were rephrased. The questionnaire was again sent to the academicians and after their approval, it proceeded for pilot testing. The questionnaire items that were rephrased are highlighted in bold in Table 2.

Pilot Testing and Exploratory Factor Analysis

A pilot survey was performed to check the unidimensionality of the scales (Sekaran, 2003; Malhotra, 2008). Hence, it was decided to generate data from a small sample of 100 as also recommended by a significant number of earlier researchers (Cooper & Schindler, 1998; Hair et al., 2010). Exploratory Factor Analysis (EFA) was performed using SPSS 20. The factor extraction and rotation was performed using principal component analysis and varimax rotation with Kaiser Normalisation. The items with low factor loadings (< 0.4) were eliminated and a refined scale of 6 variables and 22 items was obtained (Kline 1994; Hinkin, 1995; Malhotra & Dash, 2011; Metin et al. 2012). The significant value (< 0.05) of Bartlett's Test of Sphericity (BTS) and acceptable value (0.749 > 0.6) of Kaiser-Meyer-Olkin (KMO) established the sample adequacy for performing EFA (as recommended by Khan & Adil, 2013; Malhotra & Dash, 2011). The 6 factors extracted explain 62.7% of the total variance. The Cronbach's alpha values for all six variables were also found to be in the range of 0.768 to 0.860 which is acceptable since they are higher than 0.7 (Hair et al. 1998; Kerlinger & Lee 2000; Khan & Adil 2013). This Indian version of the scale comprising six variables can be termed as MC scale (mobile commerce acceptance scale).

It should be noted that in Table 2, five factors (perceived risk, perceived cost, perceived ease of use, intention to use and innovativeness in information technology) has already been used in the earlier studies. However, the factor 'utility' is new. This factor has combination of items measuring the compatibility of user with technology (S9 and S10) and their perceived usefulness (S11-S15).

Table 2: Items and EFA Results

Item Code	Item	EFA Loading	Factor
	Items Retained after EFA		
S1*	I think using Mobile Commerce in monetary transactions has potential risk.	0.704	**Perceived Risk** Cronbach's Alpha= 0.848
S2*	I think using Mobile Commerce in product purchases has potential risk.	0.808	
S3*	I think using Mobile Commerce in merchandise services has potential risk.	0.672	
S5*	I think the equipment cost is expensive of using Mobile Commerce.	0.735	**Perceived Cost** Cronbach's Alpha= 0.824
S6*	I think the access cost is expensive of using Mobile Commerce.	0.850	
S7*	I think the transaction fee is expensive of using Mobile Commerce.	0.749	
S9*	Using Mobile Commerce fits my lifestyle	0.732	**Utility** Cronbach's Alpha= 0.860
S10*	Using Mobile Commerce fits well with the way I like to engage in online transactions	0.740	
S11*	Using Mobile Commerce would improve my performance in online transactions.	0.753	
S13*	Using Mobile Commerce would enhance my effectiveness in online transactions	0.646	
S14*	Using Mobile Commerce would make it easier for me to engage in online transactions	0.581	
S15*	I think using Mobile Commerce is very useful for me to engage in online transactions	0.708	
S18*	I think becoming skillful at using Mobile Commerce is easy	0.775	**Perceived Ease of Use** Cronbach's Alpha= 0.792
S19*	I think using Mobile Commerce is easy	0.761	
S20*	Assuming I had access to Mobile Commerce, I intend to use it	0.585	
S22#	I intend to continue using Mobile Commerce in the future.	0.648	**Intention to Use** Cronbach's Alpha= 0.768
S23#	As a user, I would keep on using Mobile Commerce in the future.	0.721	
S25@	Have free access to Mobile Commerce applications for a month might convince me to use it	0.796	

Item Code	Item	EFA Loading	Factor
S27#	I like to experiment with new technologies.	0.818	**Innovativeness in Information Technology (IIT)** Cronbach's Alpha= 0.848
S29#	In general, I would not hesitate to try out new information technologies.	0.612	
S30#	I would look for ways to experiment with new technologies.	0.779	
	Items Not Retained after EFA		
S4*	I think using Mobile Commerce puts my privacy at risk.	< 0.40	
S8*	Using Mobile Commerce is compatible with most aspects of my online transactions	< 0.40	
S12*	Using Mobile Commerce would increase my productivity in online transactions	< 0.40	
S16*	I think learning to use Mobile Commerce is easy	< 0.40	
S17*	I think finding what I want via Mobile Commerce is easy	< 0.40	
S21@	**Given that I had access to Mobile Commerce, I predict that I would use it**	< 0.40	
S24@	I would like to know more about Mobile Commerce before using it	< 0.40	
S26@	**Trial access to 4G might convince me to subscribe to 4G and use Mobile Commerce.**	< 0.40	

Notes: *Items adopted from the study by Wu and Wang (2005)
#Items adopted from the study by June (2014)
@ Items adopted from the study by Chong et al. (2012)

Scale Development

Sample

Though non-metropolitan part of the country includes both small towns and villages (Minsitry of Home Affairs, 2011), it was decided to generate data from small towns only. This is due to the fact that India is a very large country and differences exist even between the consumers of small towns and villages (Lu et al., 2016). It was decided to generate data from young students enrolled in educational institutes located in the Aligarh district of the largest state of India i.e. Uttar Pradesh. The district of Aligarh is located around 140 kilometers in the southeast of the national capital, New Delhi. Due to proximity to the national capital, easy connectivity to other parts of the country and the presence of Aligarh Muslim University (one of the top

universities funded by the Federal Government of India), Aligarh is the preferred location of educational institutes and students from other parts of the country.

Previous studies have observed that the proportion of youth (population in the age bracket of 15-29 years) within the total Indian population is around 35% (Lu et al., 2016; Central Statistics Office, 2017). According to the estimates by the National Commission on Population (2006), the average age in India would be 31.39 years in 2026. This suggests that the young population is expected to play a crucial role in the future. Moreover, previous researchers suggested that educated young population has knowledge of updated technologies and they are expected to influence the elder members of the family in the adoption of new technologies (Seegeberth et al., 2016).

Data Collection

The data was generated from the students enrolled in various programmes in colleges affiliated to Dr. A.P.J. Abdul Kalam Technical University (AKTU), Uttar Pradesh (UP) and located in Aligarh district. AKTU is affiliating in nature and its jurisdiction spans the entire state of UP in affiliating various courses such as B.Tech, MBA, MCA, PhD., etc. AKTU follows strict norms to maintain the quality of education in its affiliated institutions. Hence, the students enrolled in AKTU affiliated colleges are expected to possess a threshold level of understanding in providing feedback to questionnaire employed in the present study.

A total of 500 questionnaires were distributed. Of these, only 277 responses were received, out of which, 135 were partially filled and hence, considered as unfit for further analysis. Thus, the analysis was performed on the feedback of 142 respondents. This sample size is line with the criterion of subject to the variable ratio of 5:1 suggested by a significant number of previous researchers for employing the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) (Hair et al., 2010; Malhotra & Dash, 2011).

Confirmatory Factor Analysis (CFA)

To describe the cross loadings of items and correlation among the variables, CFA was employed on the variables obtained after EFA (Ahire et al., 1996; Khan & Adil 2013; Ahmad & Khan, 2017). The factor loadings for a majority of items were reasonably high (Figure 1 and Table 3) and hence, these items were retained onto their intended factor (Ryu et al., 2010). The values in Table 4 suggest that the model fit indices were within the acceptable range (Gerbing & Anderson, 1988; Hu & Bentler, 1999; Hair et al., 2010).

Table 3: Standardized Regression Weights

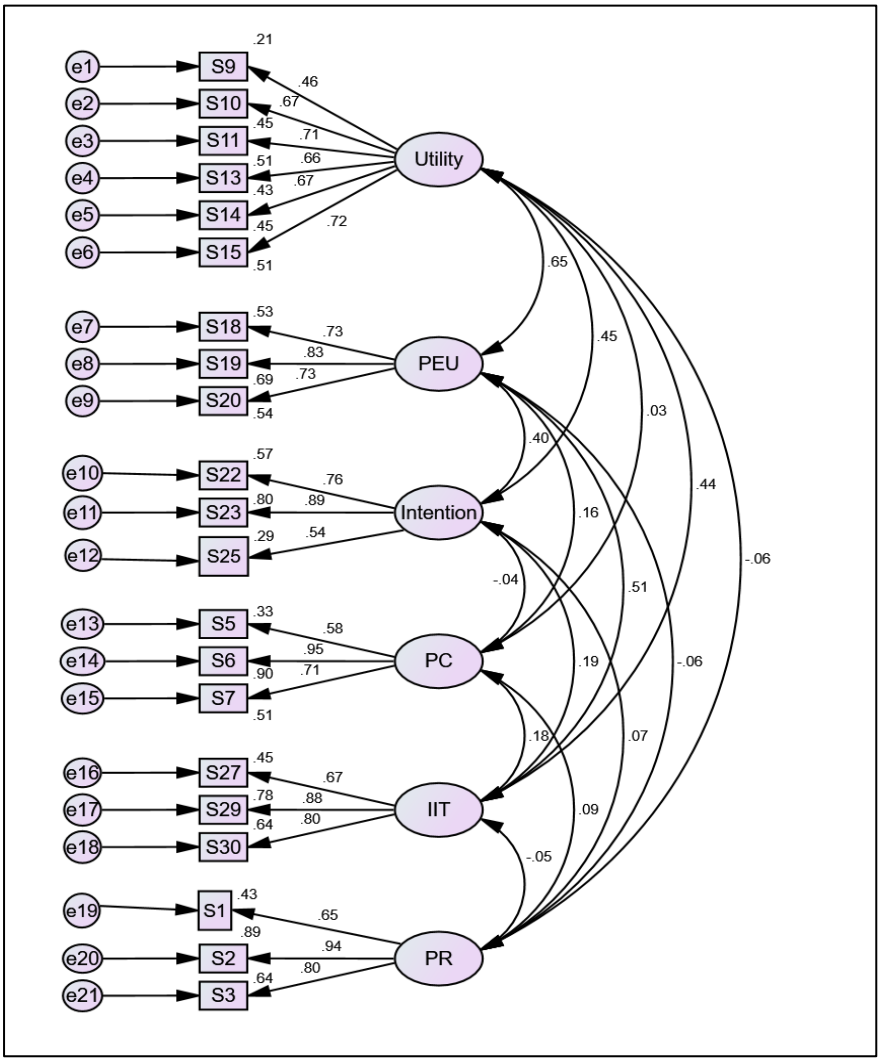
Path			Estimate
S1	←	PR	0.65
S2	←	PR	0.94
S3	←	PR	0.80
S5	←	PC	0.58
S6	←	PC	0.95
S7	←	PC	0.71
S9	←	Utility	0.46
S10	←	Utility	0.67
S11	←	Utility	0.71
S13	←	Utility	0.66
S14	←	Utility	0.67
S15	←	Utility	0.72
S18	←	PEU	0.73
S19	←	PEU	0.83
S20	←	PEU	0.73
S22	←	Intention	0.76
S23	←	Intention	0.89
S25	←	Intention	0.54
S27	←	IIT	0.67
S29	←	IIT	0.88
S30	←	IIT	0.80

Table 4: Fit Indices of Measurement Model (CFA)

Fit Index	Recommended Values*	Observed Values
CMIN/DX	< 0.30	1.581
GFI	0.90	0.846
AGFI	0.80	0.795
CFI	0.90	0.926
RMSEA	< 0.70	0.064

Notes: *Hu and Bentler (1998); Hair et al. (2010); Malhotra and Dash (2011)

Figure 1: Measurement Model



Scale Validation

In Table 5, the values of Average variance extracted (AVE) for all variables were above 0.5, indicating adequate convergent validity (Fornell & Larcker, 1981; O'Leary- Kelly & Vokurka, 1998; Hair et al. 2010; Khan & Adil, 2013). Further, the square root of AVE (diagonal values highlighted in Table 5) is greater than the 'inter-construct' correlation, confirming acceptable discriminant validity (Fornell & Larcker, 1981; O'Leary-Kelly &Vokurka 1998; Hair et al. 2010; Khan & Adil, 2013). The values for CR were also within the acceptable range (> 0.7) indicating adequate

composite reliability (Fornell & Larcker, 1981; Hair et al., 2010; Malhotra & Dash, 2011).

Table 5: Reliability and Validity

	CR	AVE	IIT	Utility	PEU	Intention	PC	PR
IIT	0.850	0.657	**0.811**					
Utility	0.861	0.509	0.402	**0.713**				
PEU	0.793	0.562	0.483	0.520	**0.749**			
Intention	0.799	0.585	0.076	0.425	0.386	**0.765**		
PC	0.829	0.622	0.202	0.014	0.182	-0.058	**0.788**	
PR	0.867	0.692	-0.125	-0.152	-0.121	0.073	-0.010	**0.832**

Notes: IIT = Innovativeness in Information Technology; PEU = Perceived Ease of Use; PC = Perceived Cost; PR = Perceived Risk

Second Order Measurement Model

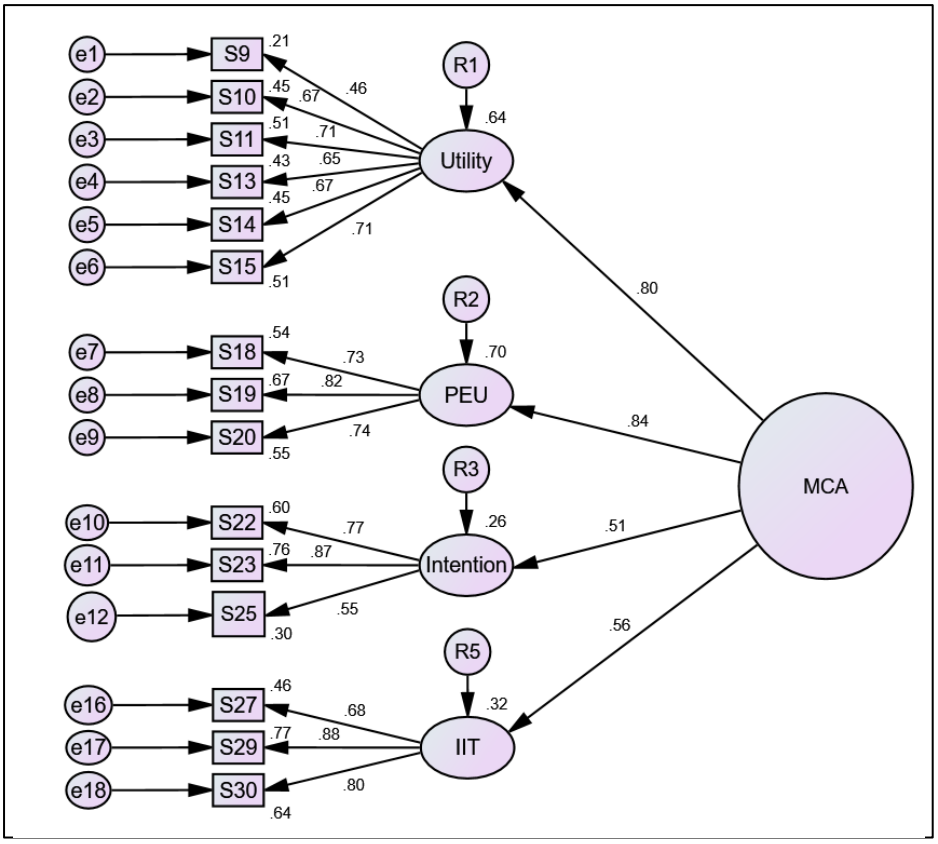
The next step for further generalisability, a second-order measurement model has been suggested by the previous researchers to assess the relationship between the main construct and the underlying constructs (Hinkin, 1995; Bowen & Guo, 2011). In the present study, the theory suggests that the construct Mobile Commerce Acceptance (MCA) consists of six underlying sub-constructs each measured by some observed variables. As per the suggestions of Marsh and Hocevar (1985) a second order measurement model was developed and validated.

The results indicated that the model has a good model fit with values as follows: CMIN/df = 2.069; CFI = 0.920; GFI = 0.894; AGFI = 0.852; RMSEA = 0.074. Out of the six sub-constructs, only four (utility, perceived ease of use, intention and innovation in information technology) loaded significantly on the main construct (Table 6 and Figure 2). The other two constructs i.e. perceived risk (PR) and perceived cost (PC) do not load significantly on MCA. Thus, MCA is established as a second order construct that is determined by the four constructs.

Table 6: Regression Path Coefficients and their Significance

Path			Estimate	S.E.	C.R.	*p*	Results
Utility	←	MCA	0.801	0.262	4.193	0.000	Significant
PEU	←	MCA	0.836	0.310	4.978	0.000	Significant
Intention	←	MCA	0.507	0.254	4.158	0.000	Significant
IIT	←	MCA	1		Reference Point		

Figure 2: Second Order Measurement Model



The summary of the final structure obtained after second order CFA can be observed in Table 7.

Table 7: Final Mobile Commerce Acceptance Scale (MC scale) for Indian Consumers

Variables	**Items**	**No. of Items**
Utility	S9, S10, S11, S13, S14 and S15	06
Perceived Ease of Use (PEU)	S18, S19 and S20	03
Intention to Use (Intention)	S22, S23 and S25	03
Innovations in Information Technology (IIT)	S27, S29 and S30	03
Mobile Commerce Acceptance Scale for Indian Consumers (MC scale)		15

Discussion

Findings of the study highlighted that positive factors such as utility, perceived ease of use, intention and innovation in information technology ARE important for educated young Indian consumers residing in the non-metropolitan part of the country. This supports earlier studies such as Wu and Wang (2005) and June (2014) which also opined that positive factors are crucial for mobile commerce acceptance. However, while their findings were limited to the metropolitan global consumers, this study confirms the applicability of these factors to the non-metropolitan townships in India. Study findings also support studies such as Davis (1989), Venkatesh and Davis (2000), Venkatesh and Bala (2008) in the context of technological acceptance in general, that the consumer acceptance of a new technology can be explained with the help of positive factors such as perceived ease of use, utility, intention and innovation. However, findings of the present study contradicts the presumptions of some earlier researchers, that for non-metropolitan Indian consumers, cost (Kumar, 2007; Maheshkar et al., 2018) and risk (Chauhan, 2015) are the important considerations. This suggests that educated young consumers in non-metopolitan Indian small towns resemble their global counterparts in relying more on positive factors than negative factors such as cost and risk. On a broader note, it can be proposed that non-metropolitan consumers are ambitious and choose innovativeness over cost and risk for using a new technology.

All the four constructs of MC Scale are discussed below:

Utility. The 6-item scale construct of Utility measures the consumer compatibility and their perceived usefulness related to the usage of m-commerce. Both compatibility and perceived usefulness are considered as key predecessors of consumer decision to embrace new technology (Agarwal & Prasad, 1998; Kim et al., 2009; Lewis et al., 2003; Lu et al., 2005; Taylor & Strutton, 2010). In this regard, the construct Utility is expected to be a significant contributor in the MC scale. The high score of the construct Utility will be an indication that users are ready to embrace mobile commerce. This would be an indicator to marketers that they must focus on designing well-targeted strategies to stimulate consumers for eventual acceptance.

Perceived ease of use (PEU). PEU measures the perception of consumers that the use of mobile technology involves minimum of mental efforts. The 3-item scale for PEU is expected to be crucial for the post-adoption usage of the mobile technology (Taylor & Strutton, 2010; Choi et al., 2011). This scale will help marketers to determine the need for educating consumers and providing them training related to the use of the

mobile phone technology. Especially, this construct would be particularly useful for determining the m-commerce acceptance behaviour of Indian rural consumers who constitute the majority of the Indian population (Ministry of Home Affairs, 2011; Lu et al., 2016), albeit being mindful of the segment of this population studied in this research.

Perceived innovation in information technology (IIT). The 3-item scale of PIIT is the determinant of consumer disposition to use and experiment with new technologies. The rapid diffusion of mobile phone technology in small towns and villages in India necessitates the understanding of the readiness of Indian consumers to embrace mobile phone technology for the purpose of online transactions (Bali, 2016; Kalaari Capital Report, 2018). In this regard, the construct PIIT would help marketers to design their promotional campaigns based on the readiness of consumers to engage with a new technology.

Intention to use (Intention). The construct intention measures the readiness of consumers to embrace m-commerce for various types of transactions. This 3-item construct is also expected to reflect the degree of consumer forbearance for the risk and cost associated with m-commerce and the degree of consumer acceptance that m-commerce offers utility to them.

Thus, the MC scale proposed in this paper, comprising factors such as utility, perceived ease of use, perceived innovation in information technology and intention to use can be crucial for an improved understanding of educated young Indian consumers residing in non-metropolitan small towns.

Conclusion

The MC scale proposed in the present study would greatly help academicians and researchers for a deeper understanding of factors influencing mobile commerce acceptance by Indian consumers of non-metropolitan cities. An important contribution of the present study is that it validates that young non-metropolitan consumers in India are on the same line as the consumers in metropolitan cities across the globe. Similar to global consumers, non-metropolitan Indian consumers give more preference to the factors such as utility, perceived ease of use and innovativeness over the factors such as cost and risk.

In this regard, the proposed scale would also assist marketers in developing appropriate strategies. The marketers must prioritise interests and concerns of Indian

consumers by focusing on the four factor scale. The present study was based on the premise that the understanding of factors important for m-commerce acceptance by non-metropolitan Indian consumers is crucial for deciding future strategies for m-commerce promotion in India. In this regard, the well-defined MC scale for Indian consumers residing in non-metropolitan cities is an important contribution of the present study.

However, the findings of this study are limited to the consumers residing in small towns. A significant proportion of non-metropolitan Indian population also reside in villages and it has been reported in earlier studies that the Indian rural consumers possess a very distinct set of characteristics (Ministry of Home Affairs, 2011; Lu et al., 2016). Thus, researchers must undertake fresh studies in future to validate the significance of the MC scale for rural consumers. Further, the scale can also be revalidated for consumers of different demographic groups, primarily for consumers of different age groups and different level of educational qualifications since this stuy utilzed students from one university to represent all young educated people in non-metropoliton areas. Future researchers should also revalidate the present scale based on consumer feedback covering a wider geographical area. Present study has only developed a scale focusing on the constructs crucial for acceptance of m-commerce. There is scope for future researchers to propose a contextualised complete technological acceptance model for mobile commerce in the context of non-metropolitan Indian consumers using scale developed in the present study.

Declaration of Conflict of Interest

The authors declared no potential conflict of interest with respect to the research, authorship, and publication of this article.

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