Evaluating M-Apps' E-Shopping Attitude of Youths using Technology Acceptance Model

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Abstract E-commerce or electronic commerce, namely the buying and selling of products and services exclusively through electronic channels, is gaining ground. The most well-known form of e-commerce or electronic commerce is online shopping, also known as business to consumer e-commerce (B2C). Mobile marketing is marketing that occurs over a mobile device, targeted at mobile users. It leverages mobile devices to communicate and engage with consumers at any point in the customer lifecycle, to drive brand value and demand for your products or services. Marketers have developed increased interest in creating branded apps, conceptually defined as software downloadable to a mobile device which prominently displays a brand identity, often via the name of the app and the appearance of a brand logo or icon, throughout the user experience. The research is able to establish the significance of TAM as a fundamental tool for analyzing customer attitude toward an evolving technological development. Mobile applications as already known are normally used for games, music, photo and video, lifestyle, education, business, entertainment, social media, productivity and utilities. Youth still is in accommodating stage with Mobile apps for shopping purposes.

Keywords: e-commerce, M-Apps, E-Shopping, Technology Acceptance Model

Introduction

E-commerce or electronic commerce, that is commercial transaction through electronic channels is gaining momentum in present commercial scenario. The most well-known form of e-commerce or electronic commerce is online shopping, also known as business to consumer e-commerce (B2C), where private customers can order various products which they then receive by courier or postal mail.

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Indian businesses has also very well accepted this mode of transaction, statistics show that Indian e-commerce sales are expected to reach US$ 120 billion by 2020 from US$ 30 billion in FY2016. Further, India's e-commerce market is expected to reach US$ 220 billion in terms of gross merchandise value (GMV) and 530 million shoppers by 2025. As of 2015, the retail e-commerce sales as a percent of total retail sales in India was 0.9 percent of all retail sales in India, but this figure is also expected to grow in the near future, reaching 1.4 percent in 2018. According to recent data, there were around 41 million digital buyers in India in 2016, representing some 27 percent of the total number of internet users in the country. India as also surpassed US in total numbers of smartphone users, and is the second biggest smartphone market in terms of active unique smartphone users, having 224 million users.
In India, 12 percent of the country's population had made a purchase via mobile phone as of the fourth quarter of 2015 providing a huge opportunity for Mobile marketing, which is the latest marketing tool of information technology era, which has been creating a large range of business opportunities (Rao and Troshani, 2007).

Mobile devices are greatly used for integrating messages, developing relationship and direct marketing (Gao, et al., 2010). The iPhone in 2007 changed the way we treated and used mobile phone, introduce of mobile- apps, which debuted in App Store in 2008 changed the way we did all kinds of activities over mobile phone. The launch of the app store allowed marketers a new channel to communicate with consumers, which expanded again in 2009 with the launch of the Push Notification Service. Push Notification service allowed marketers to take advantage of the latest ways to communicate with users resulting in introduction of Mobile Marketing concepts. Mobile marketing is marketing which occurs over a mobile device, targeting mobile users. Mobile devices are now being used to communicate and engage with consumers at any point in the customer lifecycle, to drive brand value and demand for seller's products or services. Mobile marketing provides influential chances for marketers on a large scale. Mobile marketing has become much more than a fashion; it has become an increasingly important part of the market. Mobile marketing is now an integral part of consumer journey, meaning that it's now vital to include mobile in your marketing mix.

Marketers have developed increased interest in creating branded apps, conceptually defined as software downloadable to a mobile device which prominently displays a brand identity, often via the name of the app and the appearance of a brand logo or icon, throughout the user experience. One reason for the popularity of branded apps as a marketing device is their high level of user engagement and the positive impact this presumably has on attitudes

toward the sponsoring brand (Hutton and Rodnick, 2009). This research aims to evaluate shopping attitude of youths using mobile ecommerce, as many of the Indian e-commerce companies plans to adopt mobile only strategy (like Flipkart, whereas myntra is already using mobile only strategy). Also youth represent a major segment involved in mobile e-commerce.

Literature Review

Mobile commerce definitions are very similar in all literature. Any transaction with a monetary value conducted via mobile communication networks can be considered mobile commerce. Siau et al. (2001) define mobile commerce as a new type of e-commerce transaction conducted through mobile devices using wireless telecommunication networks and other wired e-commerce technologies. Clarke (2001) defines mobile commerce as the application of wireless communications networks and devices to the execution of transactions with monetary value. Frolick and Chen (2004) define mobile commerce as any form of mobile communication between a business and its customer.

Dholakia and Dholakia (2004) define mobile commerce for electronic commerce transactions carried out via mobile phones and wireless terminals. Bai et al. (2005) simply identify as the transaction conducted over a wireless telecommunication network, either directly or indirectly. Quah and Lim (2002) argue that the push model will dominate mobile advertising since it saves consumers' time and money compared to browsing content. A key component of mobile marketing communication is advertising, either in a push or a pull mode. After obtaining the consumer's permission, push advertising sends relevant but not explicitly requested text and video messages. Serrano, Nicolas et al. (2013) stated in their article Mobile Web Apps that there is a necessity of mobile web apps both in terms of commercial and technical fields. La Ferle, Carrie, Edwards, Steven M. (2009) has assessed the patterns of media and its shift from traditional channels towards internet and mobile phones. They have also considered the various mobile activities like text messaging, talking, on phone advertisements etc. and their implications

Crutsinger et al. (2010) thrown light on the teens interaction styles with reference to demographic and lifestyle characteristics. They have also investigated the attitudes of teens towards marketing practices on the basis of assertive and aggressive styles. The study specifies that a marketer can develop effective strategies that can appeal to demanding consumer or teens. Lin et al. (2013) describe that teens are highly connected in 21st century. The main usage of mobile internet is basically for task-based activities, information seeking

and communication activities, and recreational activities. The common purpose for using mobile phones are recreation and entertainment purposes, especially playing games and listening to music. La Ferle et al. (2009) assessed the actual online and mobile phone activities of teens. They have also assessed the media patterns from traditional channels to internet. They have also discussed the implications for advertisers and various activities talking, text messaging, receiving advertisements etc. on mobile phones. Chai-Lee Goi and Poh-Yen Ng (2011) explore the perception of young consumers towards mobile applications in Malaysia. The mobile applications which influence the on M-Commerce on the positive aspect are emergency, communication, content delivery and transaction, entertainment and on the other facet location factor has minimum impact.

Technology Acceptance Model (TAM) Because of the rapid development of information technology, understanding the willingness of consumers to accept new information technology has become one of the most important considerations for any corporate planning strategy blueprint. Accordingly, Davis (1989) first proposed the Technology Acceptance Model to represent the consumers' mental processes when using information technology. Generally speaking, TAM consists of five variables: perceived ease to use (PEOU), perceived usefulness (PU), attitude (ATU), behavioral intention (BI), and actual usage behavior. Perceived usefulness and perceived ease of use are considered the two key elements that affect consumer acceptance of information technology.

TAM (Davis 1989) as shown in Figure 1, has been cited over numerous times and the TAM scales have been used to assess all sorts of technological systems. While these scales have been applied and adapted across a wide range of technology contexts, little psychometric work (e.g., Doll et al. 1998; Segars and Grover 1993) has been conducted since the initial scale development.

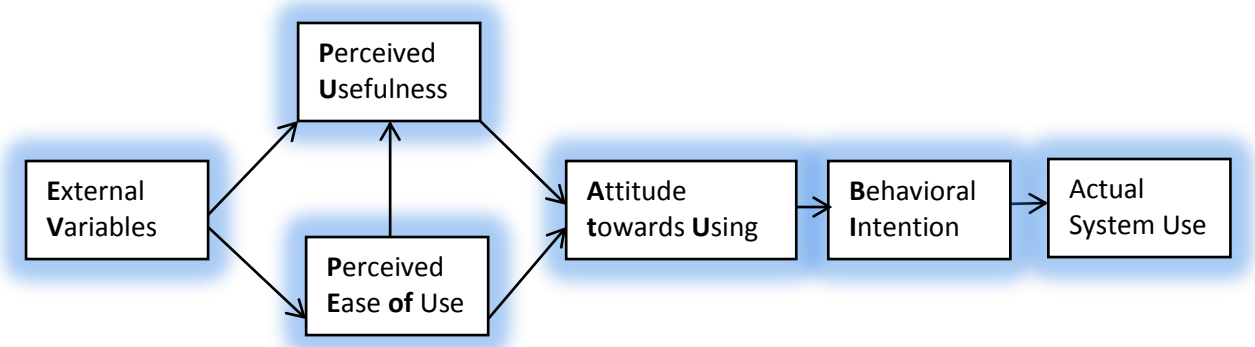

Figure 1: Technology Acceptance Model (Davis, 1989)

The scales measuring PEOU, PU, and BI are generally thought to have good psychometric properties, there are concerns regarding TAM's boundary conditions and potential misapplication of the constructs as these scales have been applied to different technology contexts (e.g., Hu et al. 1999; Lai and Li 2005; Pavlou and Fygenson 2006; Wu and Wang 2005). Further, while many of research has presented PEOU and PU as reflective constructs, research suggests that PEOU and PU scales may have multiple dimensions (Evermann and Tate 2011)

Research Hypotheses and Research Framework

Past studies related to TAM primarily explored the inclination of consumers to accept new information/ technology products and verified that TAM has a certain level of predictive effect on the willingness of acceptance (Cheng, et al., 2006; Kim, et al., 2008).

The causal relationships between perceived usefulness (PU), perceived ease of use (PEOU), attitude towards usage (ATU), and behavioral intention to use (BI) technology are specified in the TAM.

Construct Definitions

Attitude: Individual's positive or negative feeling about performing the target behavior (e.g., using a system).

Behavioral intention: The degree to which a person has formulated conscious plans to perform or not perform some specified future behavior.

Perceived ease of use: The degree of ease associated with the use of the system.

Perceived usefulness: The degree to which an individual believes that using the system will help him or her to attain gains in job performance (which in this study is fulfilling of shopping objectives).

TAM suggests that actual usage of the system is determined by the users' behavioral intention to use (BIU) the system, which is determined by users' attitude towards using the system and their perceived usefulness and ease of use of the system (Davis, et al., 1989).

Together, PU and PEOU constitute a significant influence on ATU, which in turn affect the BI. Similarly, behavioral intention to use (BI) the system is posited to be affected by attitude towards usage (ATU).

The objectives of the present research are consistent with the related literature, present study tested the following hypotheses:

H1: Perceived usefulness of M-app (PU) have a significant influence on attitude towards usage (online shopping) (ATU).

H2: Perceived ease of use of M-app (PEOU) have a significant influence on attitude towards usage (online shopping) (ATU).

H3: Perceived ease of use of M-app (PEOU) have a significant influence on perceived usefulness (online shopping) (PU).

H4: Attitude towards usage of M-app (ATU) have a significant influence on users' behavioral intention to use (BI) the Mobile apps for online shopping.

The research model (Figure 2) represents above hypotheses as a causal relationship schema. The boxes represent the constructs which were measured by a set of items (Annexure 1), with arrows representing hypotheses 1 to 4.

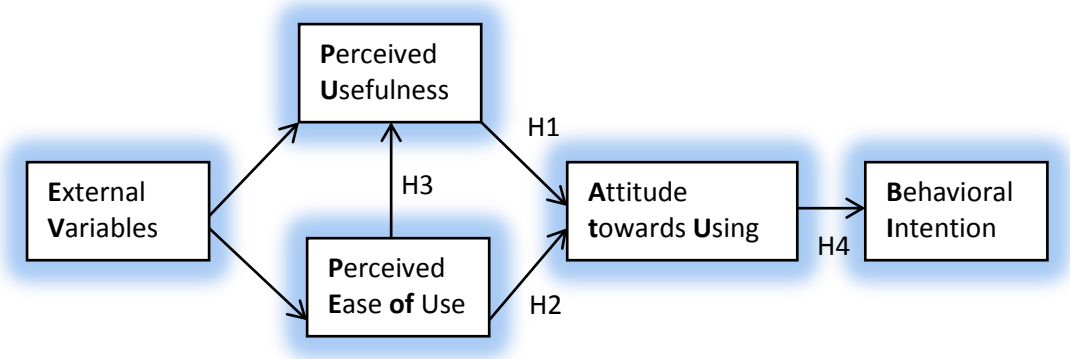

Figure 2: Research Model

Research Methodology

Research Design: Exploratory

Participants: Hostellers studying at under graduate and post graduate level in a private university of Dehradun were contacted for their views as they represents the youths (18 – 24 years) more involved in e-shopping activities. Also hostellers tend to have similar socio-economic background, limiting the role of external variables. A total 550 students were approached, out of which 271 responded (with complete data), i.e. a response rate of 49.3 %.

Measures: The instrument used consists of two sections (Annexure 1). Section I is designed and used to identify demographic attributes of the respondents. The demographic items capture academic level, gender, age, and experience of students' mobile usage. The questions in Section II were based on prior studies with modifications to fit the specific context of the mobile app usage and subsequently developed from the TAM scales, adapted from Davis, at al. (1989) and Venkatesh, et al. (2003). Our research TAM model consisted of 22 items (see Table 1) that measured "perceived usefulness" (6 items), "perceived ease-of use" (6 items),

and "attitude towards usage" (5 items) and "behavioral intention to use Mobile app" (5 items). The response scale for all items was a seven-point Likert scale.

Data Collection: An online questionnaire, using Google forms was emailed to students.

Results and Discussion

The descriptive statistics for all the factors are shown in Table 1. All means are above the midpoint of 3.00. The standard deviations range from 1.401 to 1.622 indicating a normal distribution around the mean.

Factors	Questions	Mean	Standard Deviation
PU	Q8.	3.44	1.509
	Q13.	4.22	1.469
	Q17.	5.14	1.496
	Q19.	3.02	1.473
	Q24.	5.80	1.416
	Q27.	4.48	1.520
PEOU	Q11.	3.46	1.422
	Q15.	4.58	1.479
	Q18.	3.64	1.524
	Q20.	5.58	1.401
	Q26.	3.46	1.581
	Q28.	4.02	1.488
ATU	Q7.	3.18	1.423
	Q12.	5.68	1.456
	Q16.	5.19	1.507
	Q21.	4.98	1.444
	Q25.	3.56	1.622
BI	Q9.	3.56	1.474
	Q10.	4.12	1.410
	Q14.	3.64	1.424
	Q22.	3.84	1.476
	Q23.	3.24	1.408

Table 1: Summary of means and standard deviations (N=271)

Reliability and validity analysis- As per the recommendations of Nunnally (1978), Cronbach's alpha of 0.7 or higher value is used as the basis of judgment for reliability of the

questionnaire. Table 2 is a summary of reliability values of each factor dimension, which varies from 0.948 to 0.958, reflecting good reliability of the instrument used. For validity, the recommendations of Hair et al. (2006) were followed i.e. the absolute value of each variable factor loading should be greater than 0.5, as it reflect that the measurement model has a good fit. The absolute value of each variable factor loadings ranges from 0.84 to 0.94 as shown in Table 2.

Dimension/Item	Factor loadings
Perceived usefulness (PU) (Cronbach's = 0.953 ; AVE = 0.552)	
Q8	0.88
Q13	0.85
Q17	0.84
Q19	0.92
Q24	0.91
Q27	0.86
Perceived ease of use (PEOU)(Cronbach's = 0.958 ; AVE = 0.517)	
Q11	0.88
Q15	0.86
Q18	0.85
Q20	0.92
Q26	0.91
Q28	0.89
Attitude towards usage (ATU)(Cronbach's = 0.948; AVE = 0.561)	
Q7	0.88
Q12	0.94
Q16	0.92
Q21	0.89
Q25	0.93
Behavioral intention to use (BI)(Cronbach's = 0.952 ; AVE = 0.427)	
Q9	0.87
Q10	0.92
Q14	0.89
Q22	0.87
Q23	0.92

Table 2: Assessment items and reliability and validity analysis

Structural equation modeling analysis- After conducting goodness-of-fit test of structural equation modeling on the mobile app for shopping in order to confirm that the research model and the observed data had a good fit. The researcher undertook path effect analysis.

Goodness-of-fit test of structural equation modeling- A goodness-of-fit test of structural equation modeling results in a p value of $\chi 2$ (Chi-square) that when less than 0.001, exhibits there is not a good fit between the research model and observation data, but since the $\chi 2$ indicator is easily influenced by sample size, this study used statistics of the modified degrees of freedom ($\chi 2$ / df) as the goodness-of-fit indicator to assess the model, supplemented with GFI, NFI, and RMSEA–three commonly used goodness-of-fit indicators to synthetically determine if the model is suitable or not.

The results showed that each indicator is above the acceptable range. The results of goodness-of-fit test for each indicator are summarized in Table 3.

Fit measures Chi squared	Values
RMR	0.48
RMSEA	0.66
GFI	.0879
CFI	0.92
NFI	0.983

Table 3: Goodness of fit measures

Path effect analysis- After confirming the overall model's goodness- of-fit, this study undertook the path analysis of the model through structural equation modeling (SEM). Results of hypotheses testing confirm a statistically significant relationship as predicted in the proposed model (Table 4). 2 out of 4 hypotheses were supported by the data. Perceived ease of use (PEOU) had a significant effect on attitude toward using (ATU), with $p < 0.001$. While perceived ease of use (PEOU) had a significant effect on attitude toward using (ATU), perceived usefulness (PU) did not. Moreover, perceived ease of use (PEOU) had a significant influence on perceived usefulness (PU), with $p < 0.05$.

Hypotheses	Path	Path coefficient	*t*-value	Results
H1	PU → ATU	0.68	1.14	Rejected (Not accepted)
H2	PEOU → ATU	0.31	3.22*	Not rejected (Accepted)
H3	PEOU → PU	0.72	6.37**	Not rejected (Accepted)
H4	ATU → BI	0.94	1.44	Rejected (Not accepted)

*$p < 0.05$; **$p < 0.001$

Table 4: Hypotheses testing results

The structural model and hypotheses were tested by examining the path coefficients and their significance. Consistent with our hypotheses, PEOU demonstrated a significant influence on ATU (path = 0.31). Similarly, PEOU demonstrated a significant influence on PU (path = 0.72). The link between PU and ATU (path = 0.68) and ATU and BI (path = 0.94) was non-significant at the 0.5 level of variance. This finding supports current research that demonstrates the strong relationship among PEOU, PU and ATU.

Conclusion

The research is able to establish the significance of TAM as a fundamental tool for analyzing customer attitude toward an evolving technological development. Mobile applications as already known are normally used for games, music, photo and video, lifestyle, education, business, entertainment, social media, productivity and utilities. Youth still is in accommodating stage with Mobile apps for shopping purposes.

There are many other barriers in the usage of Mobile apps, such as feeling of getting trapped, as the scope for searching other vendors offers are limited, at the same time it is an opportunity for marketers to position themselves as value brand; connectivity is still a problem, especially during monetary transactions; constantly updates of Mobile apps are required to match with the handset technology.

Present research is also limited in its approach as only single geographic area was covered due to time and cost constrains. Also other variable could be added to identify other dimensions of the problem. Mobile app are facing tough competition form mobile website as the capacities and capabilities of smartphone are on a rise.

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	Name (optional)							
Q1	Gender	Male	Female					
Q2	Age	17 -19	20-22	22- above				
Q3	Education level	UG	PG					
Q4	Do you shop on line	Yes	No					
Q5	Do you use Mobile app for shopping	Yes	No					
Q6	How often do you shop on line	Once a week	Once in a month	Once in few months				
		Strongly Agree	Moderately Agree	Slightly Agree	Neutral	Slightly Disagree	Moderately Disagree	Strongly Disagree
Q7	I have a generally favorable attitude toward using the Mobile app for shopping.	7	6	5	4	3	2	1
Q8	Using Mobile app would enable me to accomplish shopping more quickly.	7	6	5	4	3	2	1
Q9	I intend to use the Mobile app for shopping.	7	6	5	4	3	2	1
Q10	I intend to use the Mobile app frequently for shopping.	7	6	5	4	3	2	1
Q11	Learning to operate Mobile app for shopping was be easy for me.	7	6	5	4	3	2	1

Q12	I believe it is a good idea to use the Mobile app for shopping.	7	6	5	4	3	2	1
Q13	Using Mobile app would improve my shopping performance.	7	6	5	4	3	2	1
Q14	I intend to use the Mobile app for shopping as often as possible.	7	6	5	4	3	2	1
Q15	I found it easy to get Mobile app to do shopping.	7	6	5	4	3	2	1
Q16	I like the idea of using the Mobile app for shopping.	7	6	5	4	3	2	1
Q17	Using Mobile app would increase my productivity in shopping.	7	6	5	4	3	2	1
Q18	My interaction with Mobile app form shopping was clear and understandable.	7	6	5	4	3	2	1
Q19	Using Mobile app would enhance my effectiveness in shopping.	7	6	5	4	3	2	1
Q20	I found Mobile app for shopping to be flexible to interact with.	7	6	5	4	3	2	1
Q21	Using the Mobile app for shopping provided me with a lot of enjoyment.	7	6	5	4	3	2	1
Q22	I plan to use Mobile app for shopping in the future.	7	6	5	4	3	2	1
Q23	I expect my use of Mobile	7	6	5	4	3	2	1

	app for shopping to continue in the future.							
Q24	Using Mobile app would make it easier to do my shopping.	7	6	5	4	3	2	1
Q25	Overall, I enjoyed using Mobile app for shopping.	7	6	5	4	3	2	1
Q26	It was easy for me to become skillful at using Mobile app.	7	6	5	4	3	2	1
Q27	I find Mobile app useful in my shopping.	7	6	5	4	3	2	1
Q28	Overall, I found Mobile app easy to use for shopping	7	6	5	4	3	2	1

Annexure1: Questionnaire format