

CONSUMER BEHAVIOR AND PERCEPTION WITH RESPECT TO M-COMMERCE IN INDIAN B2C RETAIL

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Abstract: The study tests a model based on Technology Acceptance Model (TAM) investigating the effect of Recommendation Systems, Information Search, Security Systems, Reputation Systems, and, Virtual Experience on Perceived Usefulness and Perceived Risks, and, their eventual effect on Trust and hence on the Consumer's Buying Intentions in B2C M-commerce retail context. The study plans to test the Measurement Model and the Structural Model with the use of Structural Equation Modeling approach. The data was collected from respondents in both online and offline modes using a structured questionnaire and analysed using AMOS. The study assumes significance in the sense, that today online retail whether through smart devices or through e-commerce is likely to significantly impact traditional retail in India, a disruptive change in the way people are making their buying decisions.

Keywords: M-commerce, Trust, B2C Retail, Structured Equation Modeling, Technology Acceptance Model (TAM)

JEL Classification: M00 General

1. INTRODUCTION

M-commerce means exchange of goods over the internet by the use of mobile phones or other personal smart devices. It can also be seen as a form of Commerce which enables one to use android applications and services that are becoming popular now-a-days and are available for free for most of the internet-enabled smart mobile devices. Using these devices and applications it is possible to locate a restaurant of your choice, stay connected with your colleagues and friends, make payments, track your workouts and so on, all in real time and with your personal device, anytime, anywhere. With the increasing availability of these devices at lower and lower prices and increased internet connectivity, the user is getting spoilt for choices. Plastic money is the new substitute for cash, making transactions easier, convenient, and, safer. With every boon is a bane. The security of most of android applications is questionable, so is their need to access personal data of the

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user. Commercial interests of business houses tend to clash with larger considerations of ethics and privacy. A compromise between social costs and benefits is the need of the hour. One cannot however deny the fact that technology is gaining more and more control over our lives and likely to do so in future. In the light of this, what are the issues which are important and need to be taken care of by B2C organizations is what is becoming increasingly important. Organizations need to take care of ensuring integrity in transactions, enhancing usability of applications, security and privacy issues related to M-commerce.

M-Commerce can also be interpreted as “implementation of e-commerce on mobile phones” thus implying that any e-commerce website which can be used from a personal smart wireless device. In reality m-commerce has crossed these parameters also because it’s not that usage only from mobile phones but today it is recognized as a unique business opportunity with distinct characteristics, functions and features. It is not the merely extension of internet based e-commerce channel. Of course, there are similarities between e-commerce and m-commerce with respect to the products and services available. But the point of difference, for a lay man, lies in the fact that e-commerce involves doing business or transaction through personal computers whereas m-commerce includes doing transactions through personal devices such as smart phones, tablets or any other smart enabled mobile device.

M-Commerce is selling like hot cakes in the market. This has been possible with the advent of technologies and the buzz created using these technologies. Advances in wireless communication technologies are basically extending the net to various portable devices and appliances such as cellular phones, pagers, palmtop computers, etc. Competition has resulted in the wireless infrastructure becoming cheaper, resulting in more bandwidth at a lower per unit cost. It is becoming faster than wire and easier to use as well and has overcome nearly all the disadvantage of brick and mortar stores.

So from the above said description we can summarize this m-commerce revolution as “anywhere, anytime access with the use of smartphones”.

Some of the M-commerce applications that have made life better for different kinds of users include the following:

- M-Shopping
- M-Ticketing
- M-Reservation
- M-Auction
- M-Advertising
- M-Gaming

- M- Video
- M- Music
- M- Betting
- M- Information provisioning

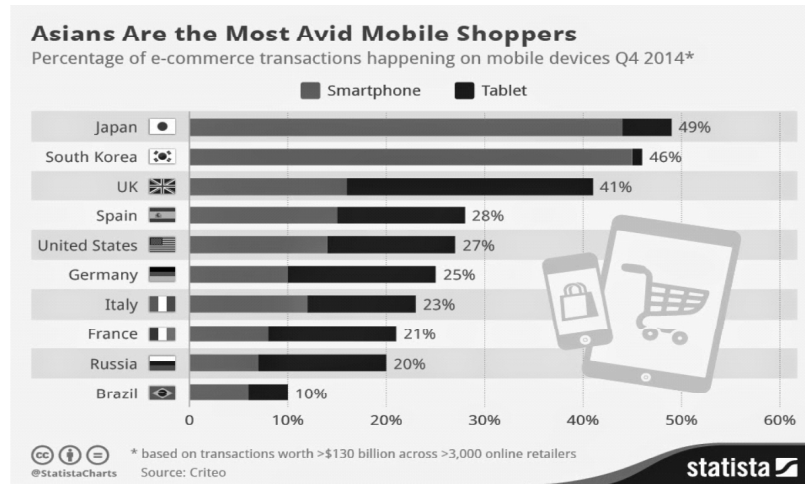


Figure 1: Top M-Commerce Using Countries

While few nations have been enthusiastic regarding adoption of M-commerce, Figure-1 shows that Japan and Korea are the ones leading this wave. Overall Asians are the leading adopters of this opportunity.

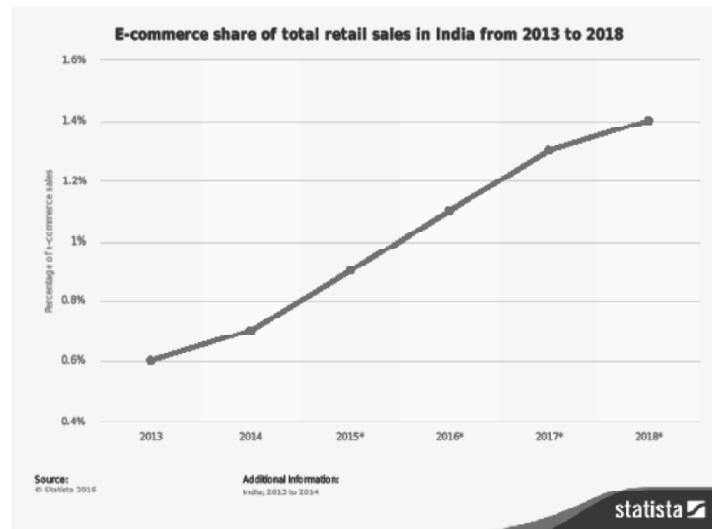


Figure 2

A disruptive change is deemed as a change which is likely to affect the way business is currently done, and, hence a change is required in all the related functions also. The transition from traditional retail to e-commerce has all the inklings of a disruptive change. As one can see from Figure-2, share of e-commerce in the retail market is increasing day by day as is likely to go up in the future also. According to the ibef report accessed at their website, given the growth and future potential of e-commerce, it accounted for nearly half of the US\$6.4 billion of funding in Indian startups in the first three quarters of 2015. Startups are also coming fast and furious in the area of e-commerce. Thus a disruptive change in the area of retail is the coming of age of e-commerce which is likely to change the entire retail ecosystem. As of now, some of the retailers are planning to away with e-commerce websites and rely only on the android application i.e. m-commerce. Already, few major player are using television advertising depicting the use of mobile phone for shopping, and, indications are that the m-commerce trends are here to stay and grow.

2. LITERATURE REVIEW

Persson & Berndtsson (2015) studied determinants of smartphone shopping adoption to find the key factors which influence the customers to shop online for consumer goods using smartphones in Sweden. They reviewed previous research on online shopping and m-commerce and developed the Unified Theory of Acceptance and Use of Technology model. Interviews were conducted with online shoppers and industry experts to validate their questionnaire. Data was collected from 303 shoppers and hypothesis testing was done using multiple regression. The results showed that social influence and location of the shopper have significant positive effects on behavioral intention of shopping using smartphones.

Kalinic & Marinkovic (2015) conducted empirical analysis of user's intention to adopt m-commerce to investigate possible factors leading to adoption of m-commerce. Survey technique was used to collect the data, and, Confirmatory Factor Analysis was performed. They also used the data for testing Convergent Validity and Discriminant Validity of the questionnaire using SEM methodology. A conceptual user adoption model based on TAM was proposed and influence of factors like Social Influence, Personal Innovativeness, Customization and Individual Mobility was investigated. It was inferred that these factors have a direct impact on Perceived Usefulness and Perceived Ease Of Use.

Yadav (2015) studied the Adoption of M-commerce in Himachal Pradesh to identify factors that influence customer's intention regarding use of m-commerce. Data was collected from a sample of 220 respondents through a structured questionnaire. Factor Analysis and Regression was used for analysis. It was found that Convenience, Trust and Personal Innovation are strong determinants of the intention of mobile users to adopt m-commerce.

Naqvi & Shihi (2014) used a Technology Acceptance Model approach to investigate factors leading to m-commerce adoption of services offered by private and public organizations. Data was collected from 89 m-commerce users with a questionnaire. Technology Acceptance Model was used to test the perception of customers regarding m-commerce services. The study showed that factors like Security, Privacy and Trust are the main drivers to use m-commerce services in Oman.

Saleh & Mashhour (2014) studied the role of Perceived Level of Security, Information Security and the role of Trust in influencing m-commerce. The data was collected and analyzed using SPSS. The results showed that Trust and Intention to use m-commerce was influenced by the frequency of usage of m-commerce in the past and the length of experience in using m-commerce.

Sharif *et al.* (2014) studied the psychological factors which influence consumers' intention to adopt m-commerce. Technology Acceptance Model (TAM) was used to study Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Data was collected from 222 respondents. Regression was used to analyze the data. They identified three sets of factors viz. Personality based, Internal Perception based, and, External Perception based. Internal Perception based factors have been found to be the key factors in adoption of m-commerce.

Lin *et al.* (2014) studied the Evolution of Consumers' Trust in M-Commerce. In a longitudinal study to examine how consumer trust evolves over time with usage of m-commerce. Data was collected from 332 respondents for the analysis. The study revealed that pre-use has both direct and indirect influence on m-commerce usage behavior. Psychological and Customers' Evaluation have significant impact on Satisfaction which enhances post-use Trust.

Zheng *et al.* (2012) conducted a study in China and developed a model for customer's m-commerce acceptance based on the User Acceptance Theory. Structured questionnaire was used for collecting data from 195 respondents, out of which 65 were electronic. Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) were used as a base for modifying Technology Acceptance Model (TAM). Reliability and Validity of the data collected were examined. Research model was tested using LISREL. The results showed that Perceived Usefulness, Cost, Entertainment are the factors which influence customers' adoption of m-commerce. It further showed that Perceived Usefulness was the biggest influencing factor.

Kapera (2012) analyzed the consumer perception towards m-commerce in Poland. Data was collected from 118 students of Cracow University. The results showed that m-commerce is in early stage of adoption in Poland. The main reasons for not using were found to be their negative attitude towards the business model which is mainly due to lack of awareness and knowledge among customers for m-commerce.

Wong & Hsu (2008) tested a confidence-based framework for Business to Consumer (B2C) mobile commerce adoption to develop a framework for m-Commerce. They developed Technology Acceptance Model for the study. The study showed personality based confidence to be the major factor for customers to initialize the relationship with the online mobile store. With history based confidence factors, the confidence is built over time.

3. MATERIALS AND METHODS

Literature Review indicates that the commonly used models are based on Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Expectation Theory, and, variations of the same. Current studies in this area are also based on usage of Structure Equation Modeling for Model Testing and Development. Accordingly, the following objectives are proposed:

- To study the influence of Recommendation Systems, Information Search, Security System, Reputation System, Virtual Experience, and, Sales Promotion on Trust in M-Commerce.
- To propose and test a model using Structured Equation Modeling.

Figure 3 shows the model which is proposed to be tested. It is basically an adaptation of Technology Acceptance Model (TAM) given by Davis (1986) to explain the adoption of new Technologies. The model basically used Perceived

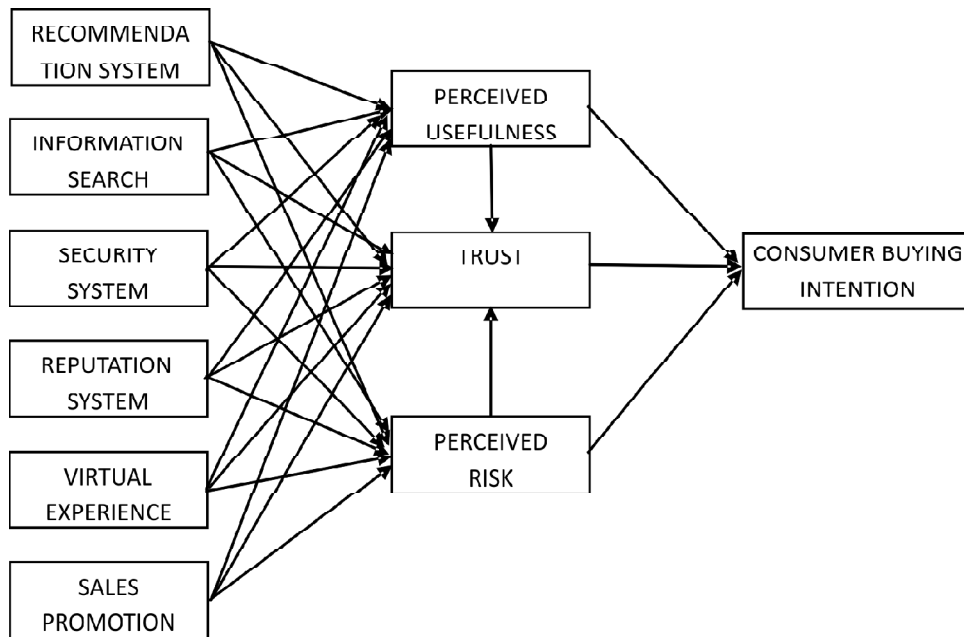


Figure 3: Research Model Proposed by Tang & Wu (2015)

Usefulness (PU), Perceived Ease of Use (PEOU), and their influence on Trust of the User and hence the intention to adopt the new technology. Several variants of the same like TAM2, TAM3 have been proposed by researchers. It has also evolved into other model like UTAUT and its variants.

All the proposed Latent Constructs are measured using 3 or more items. The questionnaire used has been included in the APPENDIX. The study uses data collected from 230 students who have used m-commerce in the age group of 19-26 years, using a structured questionnaire, in both online and offline modes. Convenience Sampling technique has been used to select respondents.

Data is collected using 5-point Likert scale ranging from Strongly Agree to Strongly Disagree in order to find the respondents intension and perception towards engaging in m-commerce transaction.

4. RESULTS AND DISCUSSIONS

The Measurement Models were created in AMOS using data in SPSS file. Each of the latent constructs viz. Recommendation Systems, Information Search, Security System, Reputation System, Virtual Experience, and, Sales Promotion was tested. Overall CMIN/ DF values were found to range from very low to around 1.902 which is in the acceptable range (should be less than 3). The Goodness of Fit indicators were also found to be in the acceptable range. The RMSEA values were found to be acceptable, indicating overall that the proposed measurement model has been found to be adequate.

Next the zero order Structural Model given in Figure-4 was tested. The model has 21 estimated parameters. Out of 21 estimated parameters there are 7 constructs, covariance among which was investigated. Salient points of the analysis are as follows:

1. By looking at the loadings it can be said that Security Systems enjoys the highest covariance with the Reputation of the m-commerce vendor or application, and, lowest with the construct Purchase Willingness. It means that customers who want to adopt an m-commerce application would feel more secure if the m-commerce website is reputed one. However, usage of the application would not automatically imply Purchase Willingness.
2. High loading has been observed between Reputation System and Security System. It means that the good Security Systems of the m-commerce vendor tends to good Reputation among the customers.
3. High loading between Recommendation System and Security Systems implies that m-commerce vendors which provide good Security Systems tend to enjoy better Recommendations.

4. Information System has a high loading with Security System and Reputation System with the same value of 0.24. It means that m-commerce vendors which provide good Information Systems are likely to be considered Secure and Reputed.
5. Virtual Experience provided by m-commerce vendors has a high covariance with Reputation System. It means that Virtual Experience feature in m-commerce websites add to the Reputation of the vendor.
6. There is high covariance between Purchase Willingness and Information System, which means good Information System implementation by the m-commerce vendor is likely to induce Purchase Willingness among the customers. After Information System, there is also good covariance between Purchase Willingness and Recommendation Systems, which means that effective Recommendation Systems provided by the m-commerce vendor can create Purchase Willingness among the visitors.
7. Sales Promotion has highest covariance with Virtual Experience, which means that Virtual Experience features in m-commerce application can act as a Sales Promotion tool.

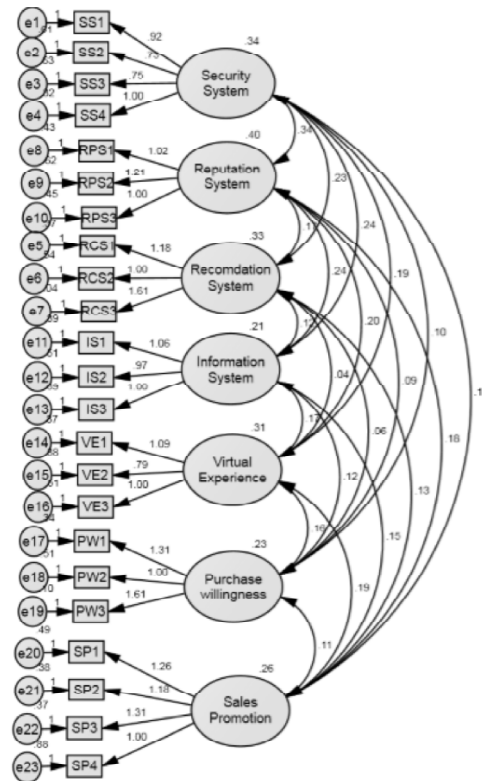


Figure 4: Zero-order Structural Model

Next we test the structural mode, the output of which is shown in Figure-5.

Salient Findings of the proposed model are as follows:

1. An analysis of the loadings show that the latent construct of "Information System" has a very significant role on the construct "Perceived Usefulness" with a loading of 1.97. "Reputation System" also plays a very significant role in describing the "Perceived Usefulness" with a loading of 0.92. Virtual Experience feature however does not enjoy good loading on "Perceived Usefulness". It could imply any of the following, that the users are not using the virtual experience features of the m-commerce vendor or they do not think that this feature is useful, or, all the m-commerce vendors might not be using it effectively.
2. An analysis of the loading of "Trust" construct shows that "Security Systems" and "Information System" has a high influence in generating Trust. Sales Promotion has the lowest loading implying it does not help in significantly influencing "Trust".
3. "Information System" and "Security Systems" have a high loading on the construct of "Perceived Risk", which can be explained as the users avoidance of vendors or apps, which provide misleading information. Sales promotion has the lowest loading on "Perceived Risk", which implies that customers do not feel that Sales Promotion in any way increases their risk exposure in m-commerce.
4. When we consider the construct of "Consumer Buying Intention", construct of "Perceived Risk" has a loading of 6.97 which states that the buying intention of the consumers depends heavily on the risk they perceive during shopping using m-commerce. The implication being that the m-commerce vendor should be clear with how information is being handled and should not provide any misleading information. The "Trust" construct has a loading of 2.10 which implies that customers prefer the trusted vendors websites or apps for shopping regularly and that trust builds through good security system of the websites and good quality information provided by them to the customers. "Perceived Usefulness" has the least loading on "Consumer Buying Intention", which means that the current set of customers take the "Usefulness" of the m-commerce as something granted and it is not likely to be a discriminating factor in consumer decision making, but, "Perceived Risk" and "Trust" are relatively more important.

5. CONCLUSION

Upon investigation of the proposed model with the given respondents, it can be inferred that "Perceived Risk" is a main influencer of "Trust" as compared to

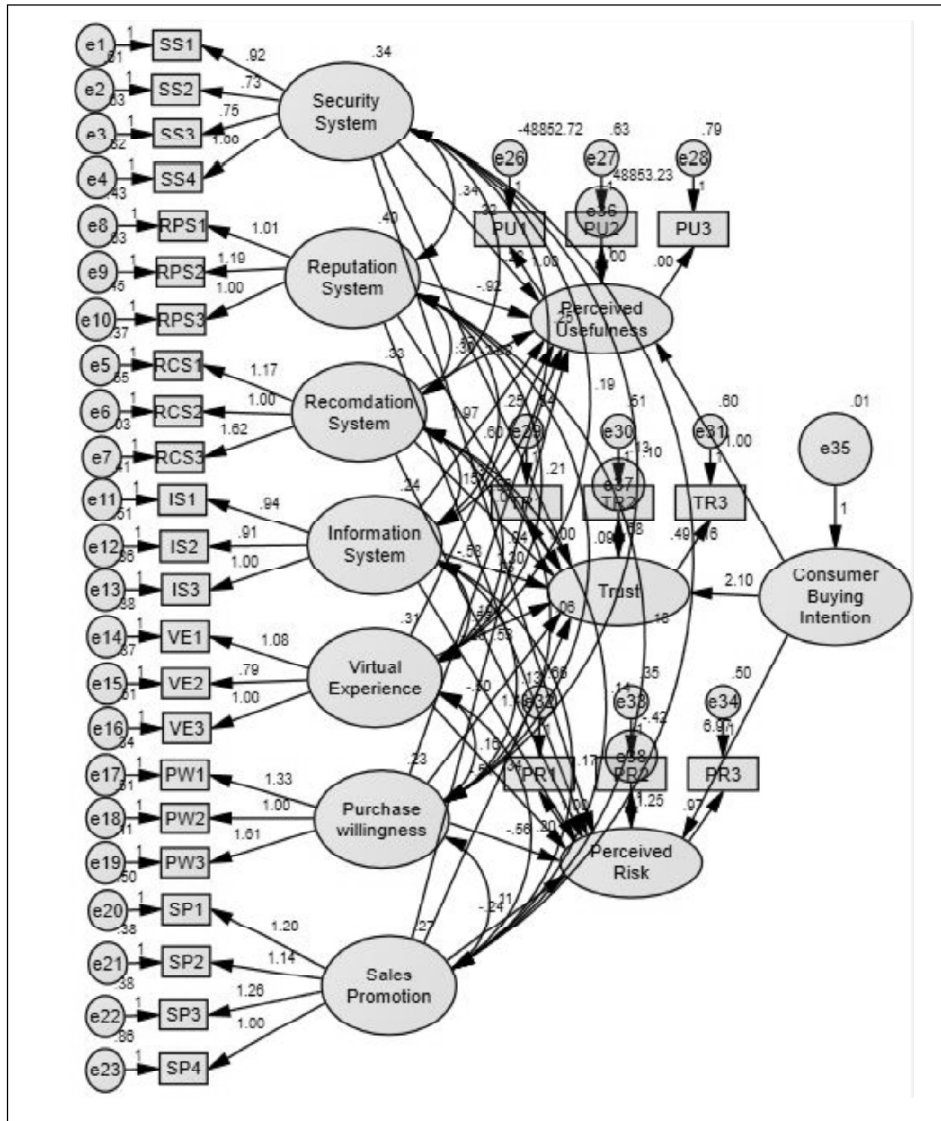


Figure 5: Output of the proposed Structural Model using AMOS

“Perceived Usefulness” in m-commerce in Indian context. If we look at “Consumer Buying Intention”, then “Trust” is a better indicator of the same as compared to the other two constructs. However, there are areas which need further investigation viz. ‘Virtual Experience’ being a new construct and its relationship with other constructs can be investigated further. We can also test for moderation effect of the demographic variables viz. Gender, Income, Geographical Influences, Cultural Influences etc.

M-commerce has the potential to be a game-changer, a disruptive change in the way B2C retail is poised at, as of now. However, much needs to be investigated as to the behavior and perception of the customer, his behavior with respect to usage of android apps, his perception on usefulness, potential risks and so on to arrive at the right mix to be offered to the customer.

References

- Davis Jr, F. D., (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results* (Doctoral dissertation, Massachusetts Institute of Technology).
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L., (2006). *Multivariate data analysis* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.
- <http://www.ibef.org/industry/retail-india.aspx>
- Kalinic Z, Marinkovic V (2015). "Determinants of user's intention to adopt M-Commerce- An Empirical Analysis", *Information System E-Business Management*, DOI 10.1007/s10257-015-0287-2, 2015.
- Kapera, K., (2013). Consumer Perception of Mobile Commerce in Poland. *Studia Ekonomiczne*, 151, pp. 87-95.
- Lin, J., Wang, B., Wang, N. and Lu, Y., (2014). Understanding the evolution of consumer trust in mobile commerce: a longitudinal study. *Information Technology and Management*, 15(1), pp. 37-49.
- Naqvi S J, Shihi H A (2014). "Factors Affecting M-commerce Adoption in Oman Using Technology Acceptance Modeling Approach", *Technology, Education and Management Journal*, Volume 3, No. 4, 2014.
- Persson J, Berndtsson J (2015). "Key Factors for Online Shopping of Consumer Goods through Smartphones in Sweden", 2015 accessed at <http://lup.lub.lu.se/student-papers/record/5473843>.
- Tang M, Wu Z (2015). "Research on the Mechanism of Big Data on Consumer Behavior Using Models of C2C E-Commerce and Countermeasures", *African Journal of Business Management*, Vol. 9(1), pp.18-34, 2015.
- Wong, Y.K. and Hsu, C.J., (2008). A confidence-based framework for business to consumer (B2C) mobile commerce adoption, *Personal and Ubiquitous Computing*, 12(1), pp. 77-84.
- Yadav P (2015). "Adoption of Mobile Commerce In Himachal Pradesh", *International Journal of Research in Commerce, IT & Management*, 2015.
- Saleh Z I, Mashhour A (2014). "Consumer Attitude towards M-Commerce: The Perceived Level of Security and the Role of Trust", *Journal of Emerging Trends in Computing and Information Sciences*, Vol. 5, No. 2, 2012.
- Sharif, M.S., Shao, B., Xiao, F. and Saif, M.K., (2014). The impact of psychological factors on consumers trust in adoption of m-commerce. *International Business Research*, 7(5), p. 148.
- Wong, Y.K. and Hsu, C.J., (2008). A confidence-based framework for business to consumer (B2C) mobile commerce adoption. *Personal and Ubiquitous Computing*, 12(1), pp. 77-84.
- Zheng, H. *et al.* (2012). "Empirical Study and Model of User's Acceptance for Mobile Commerce in China", *International Journal of Computer Science Issues*, Vol. 9, Issue 6, No 2, 2012.

APPENDIX

Security System

- Q1. When shopping online, I am worried a lot about security issues related to payment.
 - Q2. High security of shopping website makes me feel at ease and gives satisfaction in shopping.
 - Q3. When shopping online, I will mostly choose a relatively secure website.
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Recommendation System

- Q4. Shopping website recommendation of goods that I have not purchased but want to purchase helps us to make the right decision.
 - Q5. I believe that the recommendation of goods will not deliberately provide false/ misleading information.
 - Q6. I believe that recommended shopping websites will sell my personal information to others.
-

Reputation System

- Q7. When shopping online, the reputation of shopping website has a positive influence on my shopping.
 - Q8. When shopping online, I will refer to the other shoppers' comments and opinions about the website.
 - Q9. When shopping online, I usually compare different websites reputation to make my choice.
-

Information System

- Q10. I can always search for useful information in the shopping website itself.
 - Q11. The information I search for in the shopping site are detailed and complete.
 - Q12. If the shopping website provides misleading results, I will give up shopping at the website.
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Virtual Experience

- Q13. I prefer to choose the shopping site which provides virtual experience.
 - Q14. The shopping website which provides virtual experience can let me choose more suitable goods.
 - Q15. Privacy is more important than virtual experience in a shopping online.
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Perceived Usefulness

- Q16. Online shopping can save time and money.
 - Q17. When I use the shopping website, I feel good and enjoy my time.
 - Q18. In a word, online shopping is very useful to me.
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Perceived Risk

- Q19. If I see the problems related to the product in user reviews on the shopping website, I will never buy anything on the website.
 - Q20. The reason why I choose a particular shopping website is that I think it has low shopping risk.
 - Q21. I often worry about virus or hacker stealing my account information when shopping online.
-

Trust

- Q22. The recognition and trust of the vendors/ suppliers of the online shopping service will affect my adoption of the shopping website.
- Q23. I am at ease when I use a website for shopping.
- Q24. I think trading by this website is reliable.
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Purchase Willingness

- Q25. Online shopping can save time and money.
- Q26. I will normally share the experiences of shopping at a website with my friends.
- Q27. I will frequently use the websites for shopping in future.
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Sales Promotion

- Q28. Website offers promotional discounts and cashbacks could be a reason for me for shopping online.
- Q29. When availing discounts while shopping online, I feel I am getting a good buy.
- Q30. Promotional offers have allowed me to buy the products earlier than I had planned.
- Q31. Promotional offers have forced me to buy products I do not really need.
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