CHAPTER –TWO

REVIEW OF LITERATURE

DETAILED CONTENT

CHAPTER -TWO

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EXECUTIVE SUMMARY OF CHAPTER NUMBER TWO:

This chapter carries a review of the existing body of literature. Literature reviewed focuses upon writings on m-commerce and various components of m-commerce like smartphones, mobile applications, and mobile shoppers' behavior. In this chapter the scholar has reviewed various journals, research articles to know about the definitions of m-commerce, literature that talked about the evolution, features and characteristics of m-commerce, existing research papers and articles in journals on smartphone and its characteristics to understand its role on the development of mobile commerce. The research scholar had reviewed articles that helped to gain the insight on the smartphone applications and its impact on mobile commerce. The research study is based on Technological Acceptance Model and an attempt has been made to study research papers on the technical advancements of mobile applications and its contribution in bringing the mobile commerce to pinnacle, the advantages on mobile shopping applications over the ordinary websites has been studied in a greater detail, which also encompasses, the user friendliness and quality of mobile applications' influence on adopting the mobile commerce. Additionally, the determinants of mobile commerce adoption, it's drivers and various factors that influence the smartphone users turn into mobile shoppers has also been examined. Review has been carried out which covers literatures on the scope of m-commerce in India and its potential in the future. Literature review is compiled in the form of tables. It is accompanied by annexures which contain the list of references on adoption of mobile commerce, advantages of mobile conference, mobile shopping applications, smartphone attributes, security and trust in mobile commerce, and mobile shoppers' behavior. The references are given at the end of the chapter for easy navigation for further studies.

CHAPTER -TWO

REVIEW OF LITERATURE

2.1: INTRODUCTION:

Reviewing the existing literature on a particular topic provides a comprehensive knowledge to the researcher to understand, learn and analyze areas of interest. Additionally, it helps to understand the previous research done on the proposed idea of research. A good review of literature provides the current knowledge with the substantive findings along with theoretical and methodological contributions to a particular topic. In this chapter, an attempt has been made to put forward a bird eye-view on the review of literature already existing in the area of relevance of research.

2.2: A BRIEF REVIEW OF LITERATURE ON MOBILE COMMERCE:

Commerce has evolved from the barter system to trading on mobile phones. It bridges the gap between demand and supply. As mobile shoppers were more exposed to the handheld devices such as mobile phones, tablets and PDAs, commerce also reshaped itself and emerged with new face of mobile commerce. Retailers were looking for the ways to reach out to the mobile shoppers in whatever mode available in the market. Smartphones are great marketing place for the sellers to reach out to the mobile shoppers at anytime and anyplace. The development of m-commerce is unavoidable in this new era of information technology.

The term mobile commerce is a developing concept of shopping. The term has been shaped by the evolving wireless technical advancements. It is a combination of commerce, smartphones, internet connectivity, and mobile applications. The definition for m-commerce has been offered by many researchers in the different period of times. Initially, it had been understood in correlation with e-commerce but m-commerce evolved as an industry on its own, based on the nature of the components involved in it. Mobile commerce has various definitions from the authors of different backgrounds.

Müller-Veerse, (2000)[1] described m-commerce as any transaction with a monetary value that was conducted via a mobile telecommunications network and M-commerce was the buying and selling of goods and services, using wireless hand-held devices such as mobile telephones or personal data assistants. Tarasewich (2002)[2] said "mobile commerce was defined as all activities related to a (potential) commercial transaction conducted through communications networks that interface with wireless (or mobile) devices". Clarke (2001)[3] defined "mobile commerce as the application of wireless communications networks and devices to the execution of transactions with monetary value". In addition to the Clarke (2001)[4]'s definition, Chen and Frolick (2004)[5] defined "mobile commerce as any form of mobile communication between a business and its customer". Dholakia and Dholakia (2004)[6] said that "mobile commerce for electronic commerce transactions carried out via mobile phones and wireless terminal".

They also gave a simple definition that "any transaction conducted over a wireless telecommunication network, either directly or indirectly can be considered as mobile commerce".

Lee (2004)[7] further defined "M-commerce was the exchange or buying and selling of commodities, service, or information on the Internet, by using mobile handheld devices". "M-commerce was all data driven business transactions and exchanges of value by users of mobile devices via wireless telecommunication networks" (cited by Feng et al., 2006)[8]. Authors Mark N. Frolick and Lei-da Chen (2004)[5] used alternative term for M-commerce i.e. "wireless E-commerce," as such business transactions frequently leveraged the infrastructure and existing internet technologies. Sandeep Gupta (2006)[9] has also defined the term mobile E-commerce transaction as the transaction of an electronic value that is conducted with the help of mobile terminals that uses a wireless telecommunication network for communication with the e-commerce infrastructure".

According to Ngai and Gunasekaran (2007)[10] "m-commerce is similar to e-commerce except that the transactions were conducted in a mobile environment" in their research paper titled "analysis of the determinants of consumers' m-commerce usage activities". As per Mohini S. Samudra and Miling Phadt (2012)[11] "M-commerce included mobile banking services, m-payments and mobile purchases". Kourouthanassis and Giaglis (2012)[12] defined mobile commerce as the act of online consumer purchasing using mobile devices.

Rajabion, Lila (2015)[13] has given a simple explanation of m-commerce that Mobile commerce was a combination of mobile communications with existing e-commerce services. As per Phillip E. Copeland (2016)[14] "Mobile commerce included all activities containing a commercial transaction conducted through communication networks that interface with wireless devices". Samples of mobile commerce included "mobile banking", "mobile ticketing", "mobile coupons", "mobile purchase of goods and services".

Dr. Priyanka Khurana (2016)[17] described that "m-commerce enabled buying and selling of goods and services through wireless handheld devices and mad it convenient for speedy quality and quantity of transactions".

Mr Vivek B. Patil and Mr Deepak G. Awate (2017)[18] in their research paper titled "Protocols in mobile electronic commerce", said, "m-Commerce was a capability to follow commerce with the help of a handheld device like a Personal Digital Assistant (PDA), mobile phone, a Smartphone, or any other upcoming mobile equipment such as dashtop mobile devices".

Anubhuti Sharma (2016)[19] defined M-commerce as "any transaction involving the transfer of ownership or rights to use goods and services, which was initiated and completed by using mobile access to computer mediated networks with the help of an electronic device." Priyanka Soni (2016)[20] stated "M-commerce was used to buy and sell goods by using wireless devices like cell phones, Personal Digital Assistants (PDA) and other handheld devices that can be accessed with the help of the internet". Prof. Amarjyoti (2017)[21] analyzed the growth of m-commerce and defined it as "the ability to conduct commerce using a mobile device such as mobile phone, personal digital assistants, and Smartphone".

A few cases of mobile shopping included activities of ticketing, banking, and purchase of goods carried out on any mobile device, it further included coupons and services offered through mobile applications.

Liou, D.Y. (2008)[22] analyzed the development of mobile banking contextualized to the country of Taiwan. The following factors boosted the intention of smartphone users to adapt mobile commerce such as feeling of satisfaction, increased trust and the usability of smartphones in co-ordination with the mobile shopping applications. The security and design drove mobile shoppers trust to engaged with mobile commerce, along with the content availability on the mobile websites or applications (Nilashi, Ibrahim, Mirab i, Ebrahimi, & Zare, 2015)[23]. Leung and Antypas (2001)[24] "m-commerce as together content delivery (notification and reporting) and transactions (purchasing and data entry) on mobile devices".

Chai - lee (2016)[25] appraised m-commerce in Malaysia in his research paper titled "Special Issue: E-commerce trends and future of E-commerce M-Commerce: Perception of mobile shoppers in Malaysia". Author said "Mobile commerce (M-Commerce) referred to the pairing of smartphones that was conducted using a mobile terminal and a wireless access network with commercial transaction and other usage activities, especially content delivery, transactions, location-based services, and entertainment activities" and the author studied the primary reasons that would impact the intention of smartphone users to adopt mobile commerce.

Cole, in the year 2001 described Five principals required in the demand for m-commerce services, which were entertainment, information, connectivity, commerce, and communication. These five demands derive from the mobility enabled device. The context revolves around the theme of anytime and anywhere accessibility (Cole, 2001)[26]. Hsiang-Ming Lee and Tsai Chen (2014)[27] described the usage of mobile devices (e.g., handheld computers, PDAs, and smartphones) to carry innovative types of e-commerce activities using “wireless telecommunication networks” or different “wired e-commerce technologies”. Therefore, “m-commerce was any type of transaction or service with financial value involving, at least on one end with the help of mobile devices and wireless networks”. Key Pousttchi, David Tilson, KalleLyytinen, and Yvonne Hufenbach (2018)[28] in their research paper on "Introduction to the Special Issue on Mobile Commerce: Mobile Commerce Research Yesterday, Today, tomorrow—What Remains to Be Done?" explained mobile commerce (m-commerce) in the smartphone age was transforming established good networks and transforming the broader economy. They explained that m-commerce field needed a solid theoretical background to develop. The reality of an m-commerce research group was based on the particularities of versatility and mobile information systems and their ecosystems and their rewriting of the rules for established industries, a primary inducing force for the subsequent trend of electronic commerce (e-commerce). Even though there was still no standard definition, “the word m-commerce commonly referred to the usage of wireless devices (particularly smartphones) to carry electronic business activities, such as product orders, stock trading, fund and transfers”.

The influence of mobile commerce was fundamentally because of connectivity of wireless devices anytime-anywhere. It provided enormous opportunities for business process reformation, location-sensitive services and innovation.

Thakur and Srivastava (2013)[29], had referred mobile commerce as "all activities related to a (potential) commercial transaction conducted through communication networks that interface with wireless devices". Whereas, Chong (2013)[30] defined m-commerce which was "any transaction, involving the transfer of ownership or rights to use goods and services, which was initiated and completed by using mobile access to computer-mediated networks with the help of mobile devices". According to Benou, P., & Bitos, V.(2008)[31] "Mobile commerce or m-commerce was defined as any activity related to a commercial transaction (or a potential one)—a transaction that includes a monetary value—and was conducted via wireless and mobile communication networks and uses wireless and mobile devices as a user interface". They analyzed within this framework and considered differing aspects considering the features of the each device's memory space, battery durability, processer speed, communication capacities, and input/output capability, characteristics of the "net-working infrastructure" such as cost, latency, bandwidth, disconnections, and the components of the normal surroundings such as temperature, sound level, and brightness.

Kalakota & Robinson (2001)[32] stated M-commerce as simple as those business transactions carried out in a smartphone device. The fundamental transformation to flexibility paved access to the same information at real-time that were available only in the wired desktop (Kalakota & Robinson, 2001)[32]. Pedersson (2002)[33] noted down three entities in m-commerce such as consumer, technology, and mobile network.

Osman and Abu Bakar (2005)[35] stated "m-commerce can be considered as exchange or buying and selling of commodities and services through wireless handheld devices such as cellular telephones and personal digital assistant (PDAs)".

As per Feng et al. (2006)[8], "mobile commerce was a new and innovative business opportunity with its unique functions and characteristics, such as mobility and broad reachability". Any new technology should be efficient and free of physical and mental efforts in operating. It should be easy handling. "Perceived ease of use" acted as a important role in accepting m-commerce. Feng et al. (2006)[8] stated if technology was a user friendly, it could be adopted at a faster pace. As Pedersen & Ling (2003)[37] highlighted that regular m-services and internet services would unite into mobile internet data. A few efforts had been put into the implementation of adopting traditional models in information secured environment. Ryu, H. Chae, M., Kim, J., and Kim, H. (2002)[38] analyzed the "information quality for mobile internet services: a theoretical model with empirical validation". The nature of mobile transactions and devices create some unique challenges in security (Raina & Harsh, 2002)[39], transactional issues, post-transaction issues and physical security (Yi-Shun Wang, Hsin-Hui Lin & Pin Luarn, 2006)[40].

In common, novel m-commerce features had comprised personalization, "instant connectivity", localization, ubiquity, and convenience (Kim, Chan & Gupta, 2007[41]; Lee, Kim & Kim 2005[42]; Lee & Park, 2006[42]; Liao, Li & Xu, 2005[43])41, 42, 43.

Instant connectivity and ubiquity had been particularly significant variables for analyzing the adoption of m-commerce (Nysveen, Pedersen & Thorbjørnsen, 2005)[44].

Tiwari R., Buse S, and Herstatt C. (2006)[45] defined mobile commerce as "any transaction involving the transfer of ownership or rights to use goods and services, which was initiated and completed by using mobile access to computer-mediated networks with the help of an electronic device." According to the research, "Mobile commerce was not the only frontier for doing global business and trade but also offers multiple benefits to the business, government and consumer on a massive scale". Most definitions focused on the usability of mobile handheld devices for the purpose of shopping. An example could be "M-commerce is the buying and selling of goods and services, using wireless handheld devices such as mobile telephones or personal data assistants (PDAs)" [UNCTAD, 2002][46] Condos et al. (2002)[47] had described that m-commerce was the combination of benefits of communication and allowed buyers to shop services or goods practically from whenever they wanted. The fast improvement of innovative thinking in telecommunication about user “interface design” had significantly expedited smartphone users to receive benefits in M-commerce. Lee (2003)[48] also defined "M-commerce was the exchange or buying and selling of goods, service, or information on the internet, by using mobile handheld devices". Mobility accelerated independence that created value or choice, that was very important than mere convenience. It would have revolutions in the future the way companies work, buying, selling as well as collaborating (Anckar et al., 2002)[49].

2.3: A BRIEF REVIEW OF LITERATURE ON U-COMMERCE:

O'Hara, K., & Perry, M. (2001)[50] studied human computing interaction. No human required to be inside a vehicle for the vehicle to be required in “vehicular mobile commerce applications”. For instance, a parked car without significantly having any human inside could perform as a “wireless access point” for adjacent and enthusiastic users". In the past few years, mobile commerce drew a significant attention among users, “service providers”, vendors, “content developers”, businesses, and researchers. Consequently, a few new applications were conceived, including location-based services, mobile financial services, multi-party interactive games, and mobile auctions" (Varshney et al. 2000; Varshney and Vetter 2002; Upkar Varshney, 2005)[51], [52], [53]. Upkar Varshney (2005)[53], had revealed that "vehicular mobile commerce was not the same as the current mobile commerce, but performed perform in a vehicle" in "Vehicular mobile commerce: applications, challenges, and research problems".

For instance, "if a user carried out a mobile commerce transaction inside a vehicle without doing any computing or communications power of the vehicle, then it was plain mobile commerce". “The communications and computing functions of a vehicle were employed for mobile commerce, then it was considered to be vehicular mobile commerce”.

Dr. S. Shrilatha and Ms. M.D. Lalith Priya (2017)[54] examined the ubiquitous commerce in their research paper titled as "Ubiquitous Commerce: An Upgradation Technology of E-Commerce and M-Commerce". They said "u- commerce provided ultimate and personalized services to the users. They showed u-commerce was an extension of voice commerce, e-commerce, and m-commerce.

It was also a combination of electronics, mobile / wireless, silent and voice commerce. They had considered the characteristics of u- commerce and recognized the opportunities and threats of u-commerce". They had analyzed the features of unison, ubiquity, uniqueness, and universalities. Authors identified information increasing and privacy demands due to more quantity and diversity of devices.

Clarke (2001)[3] suggested a few specific aspects of unique m-commerce advantages: ubiquity, personalization, convenience, and localization (Eunju Ko, Eun Young Kim, and Eun Kyung Lee, 2009)[55]. Tandon R., Mandal S. and Saha D. (2003)[56] had studied "the field of wireless network combined with mobile technological advancement continues to make lives of the common citizens easy, smooth and comfortable". Mobile commerce continued to change the technologies, the business environments globally, and the new technical advancements in applications at a larger scale. The authors also considered "the benefits such as ease of use, personalization, anytime anywhere and cost-effectiveness along with drawbacks like security and low speed constrain".

Holtjona Galanxhi-Janaqi and Fiona Fui-Hoon Nah Article (2004)[57] in their research paper titled "U-commerce: Emerging trends and research issues" analysed the value, issues, and challenges in u-commerce. U-commerce could be mentioned as "ubiquitous commerce" or "uber-commerce", was a new standard that spread in the era of the internet by "providing ubiquity, universality, uniqueness, and unison". Okazaki, Shintaro, and Felipe Mendez (2013)b[58] studied wireless mobile services. U-commerce reached beyond old-style e-commerce by assimilating television, wireless, voice and commerce. They clarified u-commerce created economy was more "flexible, fluid, interconnected, efficient and resilient". “U-commerce emerged as an unceasing, unified stream of communication, content and services traded among businesses, suppliers, employees, customers, and products” (Accenture, 2001)[59]

It enabled communications and businesses to occur wherever and whenever needed without the need of telephone lines or electricity. The technology of wireless devices allowed the organizations to carry out businesses in a more efficient and effective methods (Nah et al., 2004)[60]

2.4: REVIEW OF LITERATURE ON MOVING FROM E-COMMERCE TO M-COMMERCE

M-commerce could be considered as the next generation to e-commerce. This part of section had reviewed the literatures that co-related M-commerce with e-commerce and the relation between these two dimensions of commercial activities. Ngai and Gunasekaran (2007)[10] compared the similarities of e-commerce and m-commerce. They said that “mobile commerce was doing the e-commerce activities on the mobile device” in their research paper titled "Analysis of the determinants of consumers' m-commerce usage activities". Nevertheless, this definition was questioned by other researchers such as Feng et al. (2006)[8] and Wei et al. (2009)[61]. As per the other two authors, “identifying m-commerce as an extension of e-commerce was too thin as it was wholly based on the network medium and device”. Dissimilar to e-commerce, m-commerce allowed unique commercial arenas because of reachability and the characteristics of mobility (Wei et al., 2009)[66].

Other authors, Tiwari and Buse (2006)[45] concluded, "m-commerce should not limit itself to monetary value transactions, as this does not cover other m-commerce activities such as free downloads of music and ringtones, playing mobile games, and mobile advertisements". Siau et al. (2001)[67] further explained the variations of both electronic and mobile commerce. As per the author, e-commerce was totally different to m-commerce because the transactions were carried out in wireless device in mobile commerce because of the advanced facilities in smartphones. M-commerce had more opportunities corresponded to that of e-commerce due to its natural features of flexibility, personalization, and omnipresent. As mentioned by Tsalgatidou and Pitoura (2001)[68], mobile commerce absorbed the positive sides of the web and created unparalleled facilities and additional advantages compared to e-commerce. Alain Yee-Loong Chong and Felix T.S. (2013)[69] analyzed in their research paper titled "The determinants M- Commerce over e-commerce of consumers' m-commerce usage activities". J. Jonker (2008)[70] explained the combining technologies in M-Commerce and M-Payment. This finding was in harmony with preceding studies that were conducted on the technology development by Featherman et al. (2010)[71] and Ha et al. (2005)[72]. According to Anish K Ravi (2015)[73], the prospect of eCommerce was unquestionably M-Commerce. It was a revolution for all pay and shopping. According to Atiya Parveen, Sobia Habib & Saoud Sarwar (2012)[74]. m-commerce becomes a little insignificant in business than eCommerce. Mobile commerce could be differently said as, "wireless E-commerce," because the business ventures frequently leverage the present technology of Internet and infrastructure. Mark N. Frolick and Lei da Chen (2004)[75] believed that a notable barrier to m-commerce was the lack of security in online transactions. Authors suggested that the networks without wire must consider accommodating non-repudiation, verification, privacy, and honesty while protecting the online transactions.

Priyanka Soni (2016)[17] in her research paper titled "Role of M-Commerce in present era" reviewed "the role of m-commerce in the present era".

She related e-commerce with m-commerce by considering the aspects of mobile shoppers accessing the advanced mobile applications and high-speed services everywhere at any time. M-commerce could not be considered as “e-commerce with boundaries”, however it should be identified as “a form of e-commerce with its unique advantag.

Akanksha Srivastav and Ajeet Bhartee (2016)[76] in their research paper titled "M-Commerce: risks, security, and Mobile Banking Payment Methods", discussed the "features of m-commerce including ubiquity, immediacy, localization, instant connectivity, and proactive functionality". M-banking was a great mobile commerce application. It could be defined as "E-commerce transaction, using a mobile device through wired or wireless technologies". Mobile commerce was thriving, and increased day- by -day due to its trustable feature, easy handling, and expediency. The previous study had defined "m-commerce as an extension of e-commerce" (Ngai and Gunasekaran, 2007)[10].

Reachability and mobility were the two prime features in m-commerce (Liang, 2002)[77]. Khalifa and Chen (2002)[78] analyzed the contribution of mobile technology in adopting mobile commerce.

Siau, K., Lim, E.P. and Shen, Z. (2001)[79] defined "mobile commerce as a new type of e-commerce transaction conducted through mobile devices using wireless telecommunication networks and other wired e-commerce technologies". Roughly, m-commerce could be considered as a business model that allowed a customer to perform all steps of a business transaction with the help of a mobile phone.

Constantinos, Coursaris and Khaled Hadsanein (2002)[80] discussed the "similarities and difference between e-commerce and m-commerce" in their research paper titled "Understanding M-Commerce Customer-Centric". They said that e-commerce and m-commerce had variations in the communication protocol, communication mode, internet access devices, and development languages. M-Commerce was considered as a subsection of e-commerce. The term m-commerce originated from the mobile attribute of the wireless platform that promoted mobile-electronic commercial activities. The devices such as smartphones, tabs, notebooks, and personal digital assistants with internet connectivity that can be used for mobile commerce.

Fano, A. and Gershman, A. (2002)[81] analyzed the prospect of "business services in the age of ubiquitous computing". Due increase of mobile devices, it had paved the ways to m-commerce to take root from e-commerce. Condos et al. (2002)[47] had described that mobile commerce combined benefits of communication via smartphones and existing electronic commerce applications. It permitted mobile shoppers to look for more services and goods practically from anyplace. The mobile ecosystem had the possibilities to enable people and equip them with "real-time wireless applications" that would turn their lives more into comfortable ways, business to be more productive and efficient.

Mayanka Singh Chhonker, Deepak Verma, and Arpan Kumar Kar (2017) [82] had reviewed 201 articles and adopted systematic literature view. Mobile commerce had replaced e-commerce in no time, maybe, within a decade. Mobile commerce was an extension of e-commerce.

As per Choi et al. (2008)[83] there were some distinguishing factors in functionalities between the m-commerce and e-commerce, i.e. screen size and the anytime availability (ubiquity) of the mobile device. M-commerce could be described as a kind of e-commerce that was accessible on a wireless and mobile device (Kleijnen et al., 2007)[84]. It had become a mandate that most online sellers had to create a mobile version of their merchant websites; m-commerce could be considered as the expansion of e-commerce. Nevertheless, it could be regarded as a unique channel that generates increased value to the customers. M-commerce had taken over e-commerce and become a new trend (Hseih, 2007)[85]. M-commerce can be said as "e-commerce business processes and models carried out on a mobile terminal" (Gordon et al., 2001)[86].

Peterson & Jarvenpaa, Balasubramanian (2002)[87] had stated m-commerce was expansion of e-commerce, m-commerce was recognized a distinct channel that could give "ubiquitous value" by allowing accessibility and easy handling at any place and anytime from a consumer viewpoint, m-commerce featured such as "ease of use" and usefulness would play a vital role in creating a favourable attitude about using the technology, and adopting it (Bruner & Kumar, 2005; Kulviwat et al., 2007; Nysveen, Pedersen, & Thorbjørnsen, 2005)[88,89,90].

“Many practitioners and researchers in the marketing had focused primarily on the features of m-commerce to foretell the likelihood of technology adoption” (Gupta and Kim, Chan 2007; Kleijnen, Ruyter & Wetzels 2007; Lee & Park 2006; Wu & Wang, 2005)[41,91,92,93]. Sujata, P., Deshmukh, Prashant Deshmukh and G.T., Thampi (2013)[94] stated that "m-commerce was sub-set of e-commerce which included e-commerce transactions carried out using a mobile device". K.S. Sanjay (2007)[95] stated M-commerce could be considered as an auxiliary to e-commerce but the difference was m-commerce practiced “wireless networking” that provided the benefits of convenient experience and flexibility. Sujata P. Deshmukh, Prashant Deshmukh and G.T. Thampi (2013)[94] and Dr. Sachin Gupta, and Mr Anand Vyas, (2014)[16] stated, "that M-commerce was a subset of E-commerce, which includes E-commerce transaction carried out using a mobile device". Mirzae, Asadollahi, & Jahanshahi (2014)[96] had come up with a research study about concise explanation about "mobile wireless technologies, the relationship between e-commerce and m-commerce, help a business to define what they can derive from m-commerce, fundamentals of e-commerce and m-commerce, categories of mobile commerce applications". Anurag Mishra, Sanjay Medhavi, Khan Shah Mohd, and P.C. Mishra (2016)[97] said that the unique difference in the system of m-commerce to e-commerce was that the telecommunication in m-commerce happened with the help of electronic mobile equipment. Mobile commerce and e-commerce basically differed in the features i.e. mobile device and wireless communication. Mobile devices cover all portable equipment like PDAs and “mobile telephones” as well as other devices "mounted in the vehicles that were capable of accessing wireless networks" and useful in carrying out m-commerce activities (Veijalainen et al., 2003)[98].

"M-commerce was a natural successor to e-commerce" (Siau et al., 2001)[79] M-commerce and e-commerce both were based on the internet environment accessible to the PC owners (Fenech, 2001)[99]. Y.V. Sunil Subramanyam and Y.S. Srivatsave (2015)[100] reviewed the growth of m-commerce in India. M-commerce cannot be considered as e-commerce with some limitations. However, it should be recognized as “a form of e-commerce with the exclusive benefits of its own”. Handheld devices with internet-enabled services and smartphones had various, and unique differences compared to PCs. For instance, they usually consisted of limited input capabilities and smaller screen sizes. There would be many concerns from the mobile shoppers concerning more download time due to slow internet connectivity, reliability, and security. There were some of the shortcomings that affect the growth of m-commerce in India.

Archana M. Naware (2016)[101] defined m-commerce as "e-commerce on mobile phone". The unique features of flexibility, mobility, reachability, and ubiquity in M-Commerce had increased the count of smartphone users and the smartphone internet subscribers in India. She has stated that e-commerce had advantages like round-the-clock accessibility, speedy actions, a more comprehensive choice of services or goods, along with multi-national scope.

Tarandeep Kaur (2015) [102] in her research paper titled "Transformation from e-commerce to m-commerce India" analysed "India's movement of e-commerce to m-commerce". In this study, the

researcher was "identifying the potential of E-commerce and M-commerce by reviewing its current status in India and considering the online users and their usage behaviour". Throughout this paper, the researcher had attempted "to identify the issues for the future growth of E-commerce and M-commerce with its present volume transactions in India". The author had highlighted critical challenges. She also argued that innovative and customized services, right models and fair regulations would drive the future of e-commerce and m-commerce, and it would absorb a large section in the markets of India. The author was trying to evaluate the current status of mobile commerce and e-commerce in India and the ways how it would improve the productivity in India (Tarandeep Kaur, 2015)[102].

2.5: REVIEW OF LITERATURE ON THEORIES OF ADOPTION OF INNOVATIVE IDEAS:

This section studies the theories that have been developed over the time in accepting new technologies. Researchers have used Technology Acceptance Model (TAM) over many years to measure the attitude of people in accepting a new technology. In different periods, various authors have come up with the ideas of "Theory of Reason Action (TRA)", "Theory of Planned Behavior (TPB)", Technology Acceptance Model (TAM)" and "Theory of Innovation Diffusion (IDT)" frameworks (H. M. Abu-dalbouh, 2013; M. Deb and E. Lomo-David, 2014; C. Lee, 2015)[103,104,105]. The brief description of the theories is given below:

2.5.1: Theory of Reason Action (TRA):

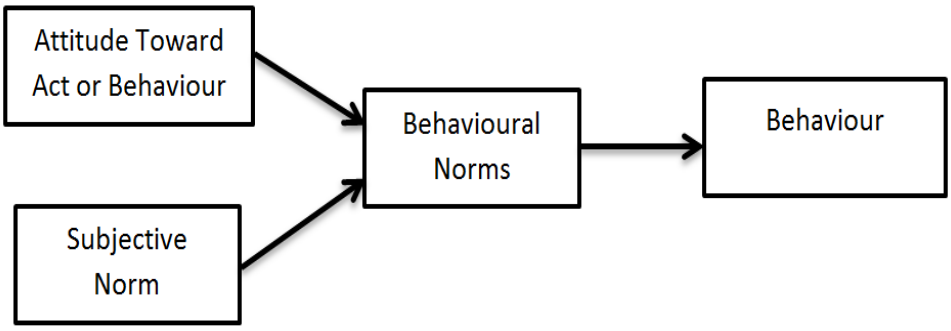


Figure Number: 2.1: Theory of Reasoned Action (TRA)

Source: Fishbein and Ajzen (1975)[106]

Fishbein and Ajzen (1975)[106] have developed the "Theory of Reasoned Action (TRA)" that theorizes an "individual's attitude" and "subjective norms" as a determinant of "behavioural intentions". It explains an "attitude towards adopting an innovation" which is derived from an "individual's beliefs" that its adoption would lead to certain definite results. "Intention to perform took place when an individual positively evaluates the performance behaviour". "More favourable the attitude with respect to a certain behaviour, stronger would be an individual's intention to adopt the behaviour."

"Subjective norms" referred as "person's perceptions of the social pressure to engage in a certain behaviour that is attitudes and beliefs of others like friends, family, colleagues, peers etc. in groups would shape his/her behaviour towards the use of a specific technology."

2.5.2: Innovation Diffusion Theory (IDT)

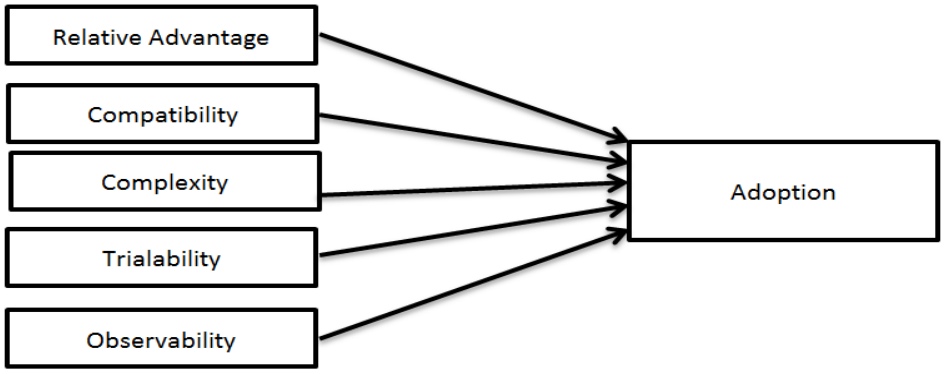


FIGURE 2.2: Innovation Diffusion Theory (IDT)

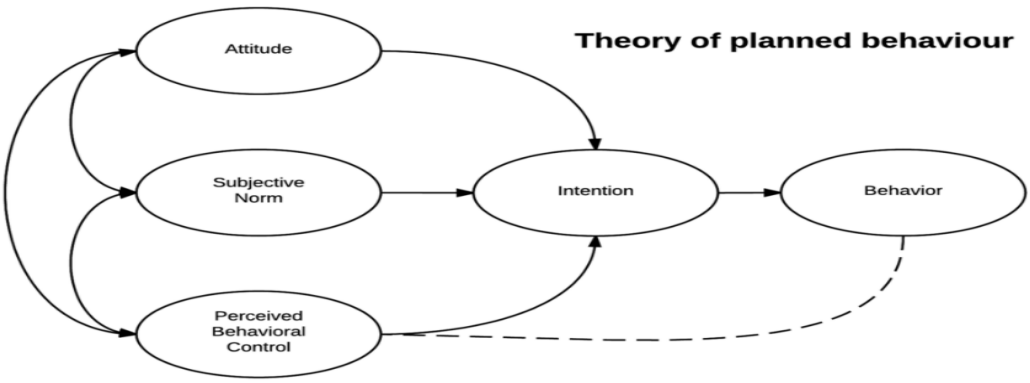
Source: Roger (1983)[107]

Roger (1983) [107] had developed a theory that dealt with understanding of adoption behavior of any innovative ideas. Roger (1983) stated that "adoption of innovation depends upon the reduction of uncertainty". Uncertainty would cause hesitance to adopt any technology that comes up newly with innovative concept. The theory focuses on five key ingredients of accepting an innovative idea viz., "Relative advantage", "compatibility", "trialability", "observability" and "complexity".

2.5.3: Theory of Planned Behavior (TPB):

Icek Ajzen (1991)[108] had developed the concept of theory of planned behaviour. He developed it based on the "theory of reasoned action". TPB is useful in studying the relationship among "beliefs", "attitudes", "behavioural inentions" and "behaviour". Ajzen proposed this concept in the article named "From intentions to actions: A theory of planned behaviour" in the year 1985. Later in 1991, Ajzen published his research article titled, "The theory of planned behavior".

FIGURE 2.3: Theory of Planned Behavior



Source: Ajzen (1991)[108]

2.5.4: TECHNICAL ACCEPTANCE MODEL (TAM):

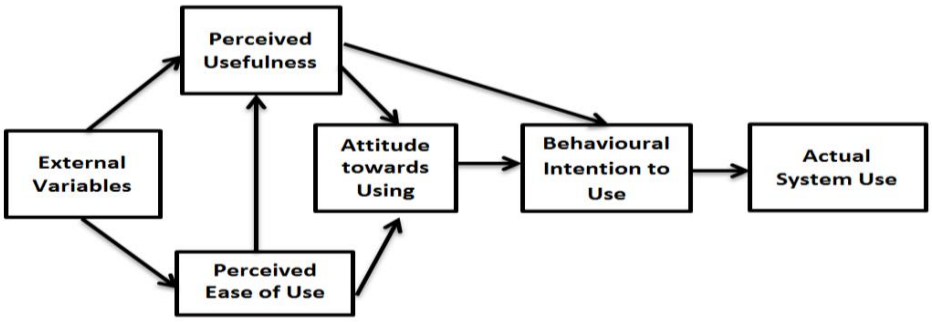


FIGURE: 2.4: Technology Acceptance Model (TAM)

Source: Davis et al. (1989)[109].

Fred Davis (1989)[109] had developed a model called "Technology Acceptance Model" to study the behavioral intention that was derived by the attitude of the customers mediating through perceived usefulness and enjoyment. "Technology Acceptance Model" helps to understand whether a user is having intention to accept a technology or not primarily based upon the factors of "Perceived Usefulness (PU)" and "Perceived Ease of Use (PEOU)". Davis had defined "Perceived Usefulness" as "a degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989)[109].

There was a study conducted by Davis and Warshaw (1992)[110] among 112 participants of IBM Canada's Toronto Development Laboratory. The respondents had an average of six months' experience with the two systems that were studied, and it was found that "PU" and "PEOU" were found significantly correlated with both "self-reported current use" and "self-predicted future use". The study resulted a strong correlation between "perceived usefulness" and "perceived ease of use" in relationship with the current usage and intention to use the technology in the use. Since the study was conducted about the new technology of e-mail as part of business improvement "perceived usefulness" played more critical than the "perceived enjoyment of use"

There are several researchers who had tested the reliability of TAM. To name a few, Adams, Nelson & Todd (1992)[111] published a research paper titled, "Perceived usefulness, ease of use, and usage of Information technology: A replication". Followed by them, Hendrickson, Massey & Cronan (1993)[112] published a research paper called "On the test-retest reliability of perceived usefulness and perceived ease of use scales". Segars & Grover (1993)[113] analyzed TAM further in their research article called "Re-examining perceived ease of use and usefulness: A confirmatory factor analysis". Subramanian (1994)[114] analyzed in his research article, "A replication of perceived usefulness and perceived ease of use measurement" and Szajna, B. (1994)[115] studied about TAM in her research article named "Software evaluation and choice: predictive evaluation of the Technology Acceptance Instrument".

She identified that the TAM model had “predictive validity for intent to use”, “self-reported usage”, and “attitude toward use”. Her research had proved that Davis’ TAM is a valid instrument that can be used to measure the technology acceptance of different population and their choice in software adoption. TAM has been tested by various researchers in different time periods. Adams et al (1992)[111] tested and validated the model of Davis (1989)[109] by replicating the work of him. He has tested reliability of the model by taking samples in different settings. The test had resulted in “internal consistency” and reliability (Adams, D. A; Nelson, R. R.; Todd, P. A.1992)[111]. Segars and Govers (1993)[113] had come up with a strategy in TAM by revisiting the research done by Adams, Nelson, and Todd (1992)[111]. They had suggested a few additional aspects to the TAM model. Those are “usefulness”, “effectiveness” and “ease of use”.

Hendrickson, Massey & Cronan (1993)[112] had divided the variables into “information use” versus “technology use”. They had invested enormous efforts in validating the theory and its sturdiness and it was proved to be more reliable model.

2.6: REVIEW OF LITERATURE ON THE ATTRIBUTES OF SMARTPHONE:

Smartphone is a mobile device with the facilities of communication both voice and non-voice data. It is compatible to the audio and video contents too. To understand the m-commerce, it is very much important to know the role of Smartphones in evolving the concept of mobile commerce. As per definitions seen above, mobile commerce is a commercial transaction carried via a mobile device. Khalifa et al. (2012)[116]pointed out the direct correlation between mobile commerce growth and the growing popularity of mobile shoppers with smart mobile devices such as tablets and smartphones. The intensity of competition among retailers had also increased as mobile retailer applications, and online services continue to add more functionality and convenience in the retail mobile channel. The researcher had tried to collect the data about smartphones in relationship with mobile commerce from the existing research articles, journal, publications, thesis and books. A. Sujeong Choi (2018)[117] studied, "utilitarian value that customers seek to obtain from using smartphone-based mobile commerce" in their research paper titled "What promotes smartphone-based mobile commerce? Mobile-specific and self-service characteristics". The author proposed the ubiquity of smartphone that create a more useful value in mobile commerce. The smartphone delivered higher value-added services to the mobile shoppers in m-commerce (Pousttchi et al., 2015; Wang et al., 2015) [28,118,] These variables were further re-emphasized by the prevalent of smartphones that created opportunities for the mobile shoppers to shop anytime, anywhere, irrespective of space and time, that reflect the service ubiquity of smartphones (Lee et al.,2012; Tojib and Tsarenko, 2012; Liébana-Cabanillas et al., 2017; Pousttchi et al., 2015; Yen and Wu, 2016) [119, 120, 121, 28, 122] . Parisa Aliniaye Lakanie and Nahid Mojarrad (2015)[123] discussed the brand prestige of smartphones in the research paper titled "The antecedents and consequence of brand prestige in the smartphone industry in Iran".

Authors argued that brand names had significant and strong influence in choosing a mobile phone. Since the advancement in mobile phone technology, there was a considerable improvement both in elegance and quick global acceptance (Bayraktar et al., 2012)[124]. According to Knapman (2012)[125], smartphone market was strongly influenced by the brand names. Recently, brand personality, brand experience, and brand reputation were identified as essential determinants that had the desired outcomes in relationship marketing and brand loyalty' (Baek, Kim, & Yu, 2010; Brakus, Schmitt & Zarantonello 2009; Ekinci & Hosany, 2006; Ha & Perks, 2005; Lee, Back & Kim, 2009149)[126, 127, 128, 15, 129].

Lakshmi and V Kavida (2018)[130] conducted a research study among 120 respondents for their research paper titled "Factors Contributing to Brand Positioning of Smartphones Among College Students in Chennai: A Study". As per their study, factors that affect the mobile shoppers buying decisions were mobile storage facility, more applications, and faster processing. (S Lakshmi and V Kavida, 2018)[130]. Arampatzis, G. Kalamatianos (2017)[131] had defined few primary functionalities in a smartphone device (compared to a mobile device).

Brian I. Spaid and Daniel J (2014)[132], in their research paper titled "The Meaning of Shopping Experiences Augmented by Mobile Internet Devices ", investigated “understandings of shoppers who used Mobile Internet Devices (MIDs) into shopping activities". They affirmed that MIDs help mobile shoppers in social and shopping management behaviors. Authors also found a strategic framework that represents the extrinsic motivators such as trust, and product information, along with the intrinsic motivators like empowerment and security. Benbasat, I., and Zmud, R (2003)[133] identified change in the information service method. Researchers emphasized that retailers can track real-time insight into their mobile shoppers by making use of the MIDs powerfully. The studies had shown that more than half of the mobile shoppers seek help from the smartphone for information about the goods while they were buying in the retail environment (Cruz and McKenna, 2011)[36]. Researchers also agreed that the growth rate of mobile data usage was faster than the internet usage in traditional personal computers. Even, in a few countries, mobile internet usage had surpassed the internet usage in personal computers (Meeker and Wu, 2013)[135]. Hedonic experience of a mobile phone usage also influenced the real word of mouth, patronage anticipation and loyalty (Jones, Reynolds, and Arnold, 2006)[136]. Leida Chen, Thomas O. Meservy and Mark Gillenson (2012)[63] did a study on system continuance on their research paper titled "Understanding Information Systems Continuance for Information-Oriented Mobile Applications" Their implications showed that the quality of information, system, process quality, and hedonic value directly or indirectly impacted the continuous use of the information-oriented mobile applications.

As per the investigation of the authors, MID influenced the shopping management activities, i.e. managing shopping lists, reminding oneself, locating stores, comparing products, checking finances, comparing prices, making purchases, managing mobile coupons, reading product reviews, and looking up for product information (Brian I. Spaid and Daniel J. Flint, 2014)[132].

Tao Zhang, Pei-Luen Patrick Rau, and Jia Zhou (2010)[34] had conducted research on attributes of mobile phones in their paper titled "Consumer Perception of Mobile Phone Attributes". They had used a few items covering brand, physical characteristics, operative and helpful attributes of Smartphones. The way mobile shoppers use their mobile phone had changed a lot in recent years. They not only looked for essential functions such as mobile applications, comfort, easy to use but other efficient execution of tasks.

Apart from interactive systems of desktop computing, mobile shoppers were attracted towards the function specifications, aesthetics, self-feeling, brand image, and user experience of smartphones. The aforesaid mentioned factors influenced overall mobile shoppers' perception. There were some other additional determinants recognized, i.e. standard functionalities, look, capacity to multimedia, ability to internet connectivity, personalized data control functionalities, body design, product and brand image. (Tao Zhang, Pei-Luen Patrick Rau, and Jia Zhou, 2010)[34].

Dong-Hee Shin (2015)[134] analyzed the quality factor of smartphones in his research paper titled "Quality of experience: Beyond the user experience of smart services". The author had categorized the factors that affect the quality of smartphones such as service quality, content quality and system quality. Shin, D. (2014)[135] studied the quality of smartphones and suggested the quality measurement of the smartphones should be improved. However, there was no definition on the concepts of development and measurement (Chin, Felt, Sekar, & Wagner, 2012)[61]. Mazzoni, Castaldi, and Addeo (2007)[64] agreed that the "content quality of the smartphones" going to play a significant determination in developing any mobile service (Dong-Hee Shin, 2015)[134].

Orose Leelakulthanit and Boonchai Hongcharu (2016)[42] studied "long term performance of smartphones in the Thai market" and repeated purchase of these products in their research paper titled "Factors Influencing Smartphone Repurchase". They studied the positive and negative co-relation of smartphone usage among Thai consumers. The commercial value and fair amount, the beauty of the design, aesthetic value, and brand reliability had positive co-relation with the repurchasing intention of the smartphones, whereas learning and adopting of new technology had a negative correlation with the repurchase intention of smartphone among the mobile shoppers.

Yoonsun Oh and Jungsuk Oh (2016)[62] in their research paper titled "A critical incident approach to consumer response in the smartphone market: product, service and contents" Authors collected data from 795 respondents and analyzed the experience of smartphone users in network coverage, ability to access content (e.g. easy handling to the applications in the smartphone), easy to use the contents in smartphone (e.g. easy-to-read and interpret), and security (e.g. privacy invasion). Customers were easier to give heed to negative comments than positive comments. Agterhuis (2012)[137] found that the more number of applications installed in the smartphone was directly related to the perception with the satisfaction and usability of the equipment. Mobile shoppers were not willing to install more number of applications if they considered the Smartphone was not capable to handle it.

Friedrich M. Gotz, Stefan Stieger, and Ulf-Dietrich Reips (2017)[72] conducted a study for their research paper titled "Users of the main smartphone operating systems (iOS, Android) differ only little in personality". They compared the key personality traits of iOS and Android users in terms of optimism, willingness to take risks, wellbeing, self-esteem, and pessimism.

They also described the characteristics of smartphones consisting of accessibility, ubiquitous, computationally powerful and sensor. Friedrich M. Gotz, Stefan Stieger, and Ulf-Dietrich Reips (2017) argued that users of iOS and Android differed fundamentally in psychological characteristics (Friedrich M. Gotz, Stefan Stieger, and Ulf-Dietrich Reips, 2017)[72].

Dr Alpana Vaidya, Vinayak Pathak and Ajay Vaidya (2016)[119] studied the mobile phone usage among youth in their paper titled as "Mobile phone usage among youth". They identified that gender did not have any difference in internet usage and texting on mobile phones. Authors collected the data from 410 students regarding their mobile phone usage behavior. They had concluded that the operating system of Android was more prevalent amongst the college students and Samsung smartphone was the famous brand among them (Dr Alpana Vaidya, Vinayak Pathak and Ajay Vaidya, 2016)[119].

Gerard Cliquet, Karine Picot-Coupey, Elodie Hure and Marie Christine Gahinet (2014)[166] researched experiences with smartphone consumption activities and shopping in their study titled as "Shopping with a Smartphone: a French-Japanese perspective". They conducted a study in two countries, respectively France and Japan, with the help of structured and semi-structured interviews. Authors said that shopping in a smartphone had three different sensitive aspects of shopping behavior information, location and payment behavior. Respondents said that they made use of the smartphone for shopping for multiple purposes. Smartphones helped the mobile shoppers to identify a store, collect the relevant information about a desired product and a shopping place, browsing through the reviews of other mobile shoppers, comparing the services and prices, seeking support while shopping, taking photos of the product, to know the promotional benefits of a product, availing the easy payment modes and make a recommendation of the products to the other mobile shoppers (Gerard Cliquet, Karine Picot-Coupey, Elodie Hure and Marie Christine Gahinet, 2014)[166].

Iosif Androulidakis, Vitaly Levashenko and Elena Zaitseva (2015)[141] conducted an “empirical analysis on green practices of mobile phone users” Authors had analyzed the most liked mobile phone function among its Smartphone users. Even though smartphones had several useful features and offering services to the users, the Smartphone users emphasized on more battery power because the users had to recharge the battery frequently in a day. Authors considered the battery life of a Smartphone was significantly weak and argued mobile shoppers buy new smartphones primarily for enjoying new features added up to the latest mobile devices. (Iosif Androulidakis, Vitaly Levashenko and Elena Zaitseva, 2015)[141].

Orose Leelakulthanit and Boonchai Hongcharu (2016)[42] studied "Long term performance of smartphones in the Thai market and repeated purchase of smartphones" in their research paper titled "Factors Influencing Smartphone Repurchase". The study had revealed that the Smartphone users tend

to repurchase the devices that were having good built quality, interactive screen, and sustainable battery back-up for an uninterrupted usage.

The ubiquitous nature of mobile phones that included the ability to access mobile internet anywhere and anytime was the key driver. Mobile shoppers preferred convenience, simplicity, enhanced speed of service, and continuous connections (Kalakota &Robinson, 2001)[32], cost-effectiveness (Wong and Lee, 2016)[136], easy to use (Ramesh, Ventakesh & Massey, 2003)[65], and added value (Anckar & D'Incau, 2002)[138].

2.7: REVIEW OF LITERATUER ON THE QUALITY OF MOBILE APPLICATIONS:

Mobile applications are software programs that are designed to function in a Smartphone. Mobile commerce is a business activity done on a mobile phone. Anshul Malika, S.Suresha and Swati Sharma (2017)[139] stated that "A mobile application was a type of software that enabled the users to complete a particular task that could be installed and run on a variety of portable digital devices such as tablets and smartphones". Mobile shoppers usually concluded the quality of the app based on the trial version. To conduct a transaction on a Smartphone, it needed to have an application in which the activity could be carried out easily. This section of the chapter had gone through various previous researches or studies done on the area of mobile applications and the role of it in m-commerce activities. There were numerous studies had been conducted earlier on mobile applications.

H. Jin, H. Xiong, B. Liu, D. Kong, L. Cen, and N.Z. Gong (2015)[140] discussed the need of recommending personalized mobile applications. J. He, H. Liu (2017)[158] studied the behavior of mobile shoppers to improve mobile app recommendations.

Wan-Chuan Chang, Chen-Ying Lee, and Chih-Hsuan Tsao (2015)[142] investigated "the effects of attitude toward using life insurers' mobile app services on customer satisfaction" in their research paper titled "The relationship between attitude toward using and customer satisfaction with mobile application services". They had surveyed 538 participants in Taiwan. The survey had given insights on the satisfaction scale of mobile application users in connection with life insurance support. Most mobile application users shared that the application was user friendly in deriving the information from the application. The study concluded that customers' "perceived ease of use" and helpfulness certainly influenced customer satisfaction. Agarwal and Prasad (1998)[144] studied about the attribution of personal innovation in adopting to any new technology. Nonetheless, the research had suggested that innovation adoption had relation with relative advantage, compatibility, and complexity (Chen-Ying Lee, Chih-Hsuan Tsao, and Wan-Chuan Chang, 2015)[142]

Li, Q., Liao, S., & Xu, D. (2005)[43] analyzed "the network-based framework for personalization in mobile commerce applications". They had concluded that mobile application developers must consider all the dimensions of the mobile shoppers' need before personalizing a mobile application.

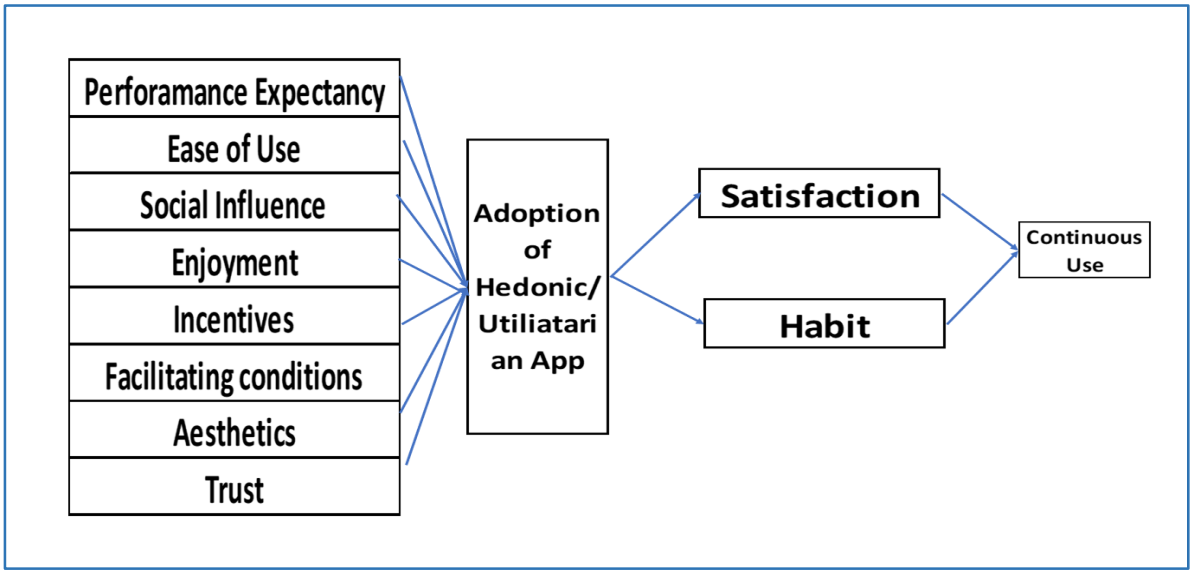
Senthil Arasu Balasubramanian, Thamaraiselvan Natarajan, & Dharun Lingam Kasilingam, (2017)[143] in their research paper titled "Understanding the intention to use mobile shopping applications and its influence on price sensitivity" debated that "the experience in shopping through mobile app was significantly different than shopping on mobile browsers". It involved various activities like tracking the order, reading reviews, earning rewards and loyalty points, comparing products, accessing saved coupons, and browsing or researching the products, etc.

Downloading mobile application into the customers' phones opens up a new channel to m-tailers to reach out to the customers for product and sales updates. Overall, downloading mobile shopping apps gives customers a personalized experience than shopping on mobile phones through browsers. Mobile shopping application users were likely to return to purchase a product twice within 30 days compared to the normal shoppers on browsing. (Thamaraiselvan Natarajan, SenthilArasuBalasubramanian, &Dharun Lingam Kasilingam, 2017)[143]

Anshul Malika, S.Suresha, & Swati Sharma (2017)[139] in their research paper titled, "Factors influencing consumer's attitude towards adoption and continuous use of mobile applications: a conceptual model" developed a model for mobile app adoption and constant use of mobile applications. They analyzed two types of mobile apps i.e. utilitarian and hedonic. Babin, B.J., Darden, W.R. and Grifn, M. (1994)[419] studied the measurement of hedonic and utilitarian shopping value. Mobile app facilitated the mobile shoppers to browse their various products available in the market and helped them to make buying decisions. M-commerce opened up opportunities to mobile shoppers and the sellers to experience the feel of new technology. M-tailers were trying to make connections with mobile shoppers by all means, beyond the boundaries, landscape, timelines with 24/7 support to sustain in the growing competitive market. Mobile app usage had taken over the web page usage for shopping activities.

Google (2015)[145] had reported that 25 per cent of mobile apps that were downloaded were never used and few mobile apps had been abandoned, almost 26 per cent, after a single use. Leung, K. and Antypas J (2001)[26] studied about better return on investments in M-Commerce. Mobile shoppers were more attracted to the mobile apps that helped them to increase their productivity and provide more knowledge than any other apps. Performance expectancy had direct relationship with the users in adopting new technology and using it continually. Any technology that helped the mobile shoppers to use the functions with less efforts and able to arrive at the desired results could be considered as ease of use. Accepting any new technology by the general public was strongly influenced by the ideas, reviews, and viewpoints of other people. Enjoyment reflected the fun part of using any technology. When mobile shoppers enjoyed new technology, they tend to use it again and again. Any promotional offers, discount coupons, or any other financial terms can be considered as incentives. Indians being very conscious about the cost, and incentives can promote the app usage and sales. It had been observed that most apps were getting downloaded to avail the offers and discounts.

Figure Number 2.5: Model for Mobile Adoption and Continuous Use:



Source: Anshul Malika, S.Suresha and Swati Sharma, (2017)[139]

The omnipresent nature of the smartphone allowed the mobile shoppers to reach out to any information at any time, book a ticket, search for a product, and make a purchase anytime by making their life easy and straightforward. All they needed to have was internet access to get connected with the online market. Few mobile shoppers were getting afraid to install mobile shopping apps in their smartphone fearing malware getting installed in their smartphones and some critical information getting stolen from mobile phones. Anxiety and lack of trust could influence the mobile shoppers to defer from the intention of buying online, downloading shopping apps and using them. Loyalty was gained by way of using mobile apps which were driven out of satisfaction. The satisfaction of customers was determined by the effective use of shopping apps and mobile payments (Anshul Malika, S.Suresha and Swati Sharma, 2017)[139].

Johnson L (2012)[146] studied the mobile booking strategy. Quality of the free version of apps played a major role in mobile shoppers buying decision of paid version. Zhu, F., and Zhang, X. (2010)[147] studied the "impact of online consumer reviews on sales". Adverse online reviews were considered to be “more crucial in the decision-making process” compared to optimistic online comments because mobile shoppers were less reluctant to take any risks (Charles Zhechao Liu, yoris A. AU and Hoon Seok Choi, 2014)[148]. Hammad Khalid (2014)[149] analyzed "the relationship between app quality and customer reviews" in their paper "On the Link Between Mobile App Quality and User Reviews". Authors said that users gave low ratings to the apps that did not meet the expected quality. Mobile applications with “high-ratings” had more attention from the users, on the other hand, users seldom saw applications with low ratings. Sustaining high ratings was exceptionally crucial. Mobile shoppers might not be able to investigate the apps that were having low ratings.

Reviews strongly impacted individual developers and organizations since “low-ratings” negatively displayed the quality of the applications, and thus influence the application's reputation and ultimately the profit too. Vasa et al. and Hoon et al. (2004)[150] analyzed studies in mobile applications and the influence on feedback. The variety of word usage was higher when the users provided a “low-rating” to an application. These mobile shoppers’ words were useful for marketers. (Hammad Khalid, 2014)[149] Kun Xu, Weidong Zhang, Zheng Yan, April (2018)[151] studied "A privacy-preserving mobile application recommender system based on trust evaluation" and stated that "Mobile applications were software packages that can be executed on a mobile device". A typical aspect of smartphone users downloading apps were highly rated and downloaded by many. Some studies evaluated the quality of the mobile app and recommending an application was based on the trust and functional behavior of the application. (Kun Xu, Weidong Zhang, Zheng Yan, April, 2018)[151]

Ion Ivam and Ivan Zamfiroiu (2011)[152] had done the quality analysis of mobile applications in their research paper titled "Quality analysis of mobile applications". They had determined the characteristics of quality measurement levels. According to their study reliability, accuracy, friendly interface of the application, continuity, portability, and security played a major role in the quality of mobile applications. As per Nocsa (2003)[153], reliability was one of the essential quality attributes. Accuracy was considered as no errors in the applications. The mobile app should be able to produce accurate results based on the information given as input. Ion Ivam and Ivan Zamfiroiu (2011)[152] presented the fact that the properties related to accuracy were so necessary, and it was associated with an individual component or contextual. Gunwoong Lee and T.S. Raghu (2014)[273] analyzed the "determinants of mobile app's success" in his research paper titled "Determinants of mobile apps' Success: evidence from the app store market". Their research inspected the keys that induce the sales and app-level features that affected success in the market of app store. They had found few factors that positively impact the sales in mobile commerce such as the offering of free apps, higher user feedback on apps, more popularity in the initial stage, reluctant to invest in the categories that were least popular, and regular updates on the features of the mobile applications, and price were positively associated with sales performance. Therefore, these app-level attributes drove to further potential user demand and increase the survival of apps. (Gunwoong Lee and T.S. Raghu, 2014)[273]. Poulcheria Benou and Costas Vassilakis (2010)[154] developed a conceptual model in their paper titled as "Conceptual model of context for mobile commerce application", which included "i) a formal and clear definition of context, ii) the depiction of its specific characteristics as metadata, iii) a methodology for its determination and iv) the presentation of an extension of class diagrams of UML for its representation, all of them tailored to the special nature of mobile commerce applications". Authors had encouraged the development of context-aware mobile commerce applications.

Sudhanshu Pandya and Shikha Gupta (2015)[155] analyzed the different applications of M-Commerce in their research study "A study of changing pattern and demand for mobile banking services in India". They identified that perceived usefulness played a vital role in mobile commerce attributes.

The research had suggested that the service providers should make sure that their services added value to the mobile shoppers, helping the mobile shoppers to meet up their fast-paced life and meet the expectation of them. They argued that more focus should be given to the attributes that affect the improvement of mobile commerce.

2.8: A BRIEF REVIEW OF LITERATURE ON PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE IN M-COMMERCE:

Factors like user interface or perceived ease of use, perceived usefulness, and aesthetic appeal are more influential in the adoption of utilitarian apps while in case of hedonic apps emotions, achievement, enjoyment, and social norms play an important role. Mobile applications have been developed to meet the expectations of the Smartphone users. With the type of the purpose of the creation of mobile applications, it can be classified into two major divisions i.e. hedonic and utilitarian objectives. Mobile applications that were used to seek information can be majorly classified as utilitarian applications. They help the Smartphone users to collect information and pay any other utility bills. These applications are helpful to the mobile shoppers in numerous ways. Primarily utilitarian applications are task oriented, and work-related. Whereas, hedonic applications are motivated by the entertainment activities, shopping, games, and any fun related activities than that of task oriented. Utilitarian applications are influenced with the acceptance of "perceived usefulness", "perceived ease of use" and "aesthetic" sense. On the other hand, "hedonic application" are influenced by emotions, enjoyment, achievement, and "social norms" played key roles in technical appetence of mobile shoppers. (A. K. Y. Tang, 2016; S. C. Kim and D. Yoon, 2011; . M. Abu-dalbouh, 2013)[156, 157, 103].

Davis (1989)[109] defined "perceive ease of use" as "the degree to which a person believes that using a system would be free of effort". TAM analyses the relationships on "perceived ease of use" and "perceived usefulness" in accepting a technology. Earlier empirical study carried out by "Wu and Wang (2005)[158]", "Khalifa and Ning Shen (2008)[78]", "Aldás-Manzano et al. (2009)[159]" and "Agrebi and Jallais (2015)[160]" had demonstrated the "relationship to be statistically significant in the aspect of mobile commerce" Agrebi and Jallais (2015)[160] analyzed the relationship between "perceived ease of use" and "perceived enjoyment" through an "experimental study on a ticket booking mobile commerce website". They explored the "intrinsic" and "extrinsic" driving factors to use the technology. "Mobile commerce websites" provided mobile shoppers "a sense of control over their actions" and encouraged a good "feeling of fun and enjoyment" among the users (Agrebi and Jallais, 2015)[160].

"Bruner Ii and Kumar (2005)[88]" studied the relationship of hedonic and utilitarian aspects of mobile shopping applications that resulted a positive outcome of intention to adopt a new technology. When people used "mobile shopping applications" for the first time, they would have had an expectation on adopting a new technology. "Mobile shopping applications" are known for their "simplicity in displaying content and information quality".

Venkatesh (2012)[161] defined ease of use (effort expectancy) as "the degree of ease associated with the use of the system". 2.1.1 Performance Expectancy Performance expectancy in Venkatesh et al. (2012) defined performance expectancy (PE) as the degree to which any system would enhance the productivity of user or will help to attain the gains in job performance. This factor was held important by the focus group and was also cited in the literature. As per K. Ghalandari (2012)[162] "any technology is perceived to be useful if a consumer is able to use it easily or the functioning of the technology is free from the effort".

Senior citizens prefer the mobile applications that are easy to use. They are willing to adopt the user friendly and effortless mobile applications. Ease of use of an application will provoke the positive reaction among the customers and they are more likely to adopt it. Mobile shoppers tend to use frequently the shopping applications that are not confusing and easy to navigate.

Davis (1989)[109] defined "Perceived Ease of Use (PEOU)" as "the degree to which a person believes that using a particular system would be free from effort". If a technology is not user friendly and complicated to use, it will have less acceptance from the users of that technology. Davis (1989) and Richard Bagozzi (1992)[163] joined to shape up the model.

Keil, Beranek and Konsynski (1995)[164] had come up with a 2x2 grid popularly known as "Usefulness" or "EOU grid". Each grid represented a combination of two different attributes. For instance, intention to use a software would be placed in a grid. The study would be done on the two aspects of "usefulness" and "ease of use" for a new software package. Technological and geographical fields are using TAM model enormously. Even health care industries too started to follow TAM model.

Venkatesh and Davis (2000)[165] had studied the TAM model again and come up with a refined model called TAM2 with the aspects of "unified theory of acceptance and use of technology". Based on the original TAM, Davis and Venkatesh (2000)[165] established the relationship of "social influence" mediated by "subjective norms", "voluntariness", and image with "cognitive instrumental process" such as "job relevance", "output quality", "result demonstrability" and "perceived ease of use". Venkatesh, V.; Davis, F. D. (2000)[165], studied "A theoretical extension of the technology acceptance model: Four longitudinal field studies", Further, Venkatesh, V.; Morris, M. G.; Davis, G. B.; Davis, F. D. (2003)[167] had done research on "User acceptance of information technology: Toward a unified view". TAM 2 was tested in the environment of both voluntary and mandatory settings that supported the concept of TAM 2 strongly. Added, TAM 3 was also evolved taking into account of e-commerce including the "effects of trust" and "perceived risk" in the use of system use (Venkatesh, V.; Bala, H., 2008)[168.] Kwon & Chidambaram (2000)[169] had examined patterns of ″cellular phone adoption" and ″use" in an urban setting.

Total numbers of 176″ cellular telephone" users were surveyed about ″their patterns of use, demographic and socio-economic characteristics, perception about the technology, and their motivations ″to use cellular services".

The research study was conducted to examine ″direct and or indirect effect of individual characteristics, PEOU, PU that is extrinsic motivations, enjoyment fun that is intrinsic motivations, and social pressure on acceptance of users of new technology".

Through multiple regression and path analysis, it was found that ″Gender, income, and occupation" had no significant effect on their ″perception of cellular telephones" and the ″social pressure to use it". ″Age" of the respondents revealed a strong and significant association with the ″social pressure" they faced to ″use cellular telephones". ″Users' perception", however, had shown a significant relationship with their ″motivations". ″PEOU" had a significant and strong association with respondents' ″PU". No significant relationship between the respondents' ″apprehensiveness" about cellular telephones and their ″PU" to use them was found. ″Apprehensiveness" about telephones was found having a negative and significant association with ″intrinsic motivations" to use it. ″Intrinsic motivation" to use ″cellular telephones" revealed a significant and negative association with ″work-related use" of ″cellular telephone". ″PEOU" was found having significant and positive relationship with ″PU" and also for the ″use" of ″cellular telephone" (ibid).

Liang, Xue and Byrd (2003)[170] had examined the use of ″Personal Digital Assistants (PDAs)" by a ″Health Care Professional". For the purpose ″compatibility, job relevance, support, PU, PEOU, and personal innovativeness (PI)" were taken as an independent variable and use as a dependent variable for the purpose of this study. The primary data were collected from total number of 77 respondents. Partial Least Squares (PLS) method was used for further processing of data and verification of the model as developed by the authors. The results of the research study show that ″compatibility" and ″job relevance" positively and significantly affected ″usefulness". ″Support" positively and significantly affected the ″ease of use". ″PI" positively and significantly influenced ″PEOU" and ″use". ″PI" affected ″PEOU" more than ″use". ″PEOU" positively affected ″PU" and ″use", it had more affected on ″PU" than ″use". And, ″PU" was found as a significant determinant of ″use" and was mediated by ″PI" and ″PEOU".

Chau (1996)[171] had developed TAM by dividing ″perceived usefulness" into ″near-term usefulness" and ″long-term usefulness". For the purpose, primary data were collected from total number of 285 administrative and clerical staff using Microsoft Word and Excel program in a large organization.

Data of these users were further processed for testing of Model using the SEM separately for the adoption of both the software. Microsoft Word and Excel showed similar results. ″PEOU" had a positive effect on ″near-term perceived usefulness" but not ″behavioural intention". ″Near-term perceived usefulness" was found affecting perceived ″long-term usefulness" and ″behavioural intention". Effect

of ″near-term usefulness" was found more on ″behavioural intention" than ″long-term perceived usefulness". ″Long term usefulness" was also found positively affecting the ″behavioural intention" of users of software.

Lu, Yu, Liu & Yao (2003)[172] had developed a TAM for ″Wireless Internet". They had divided ″usefulness" as ″short term usefulness" and ″long term usefulness".

They had also proposed to add ″technical complexity, individual difference, facilitating conditions, social influence, and wireless trust environment" as factors affecting ″short-term" and ″long-term usefulness" of ″Wireless Internet via Mobile Devices (WIMD)".

They suggested measuring the effect of ″technical complexity, individual difference and facilitating conditions" on ″PEOU". ″PEOU" effect was suggested to be measure on ″short- term usefulness and attitude" to use WIMD. ″Attitude" for WIMD was proposed to be affected by "near-term usefulness, long-term usefulness, and PEOU". "Intention to use" WIMD was anticipated to be affected by "near-term usefulness, long-term usefulness, and attitude" to use WIMD respectively.

Lu, Lu, Yu, Yao (2003)[172] had explored factors associated with "wireless Internet via Mobile Technology Acceptance". For the purpose primary data, were collected from students of MBA-level who were perusing e-Commerce course in Beijing, China. From total number of 160 responses, 128 responses were found fit for further data processing and testing of the model. "PU, PEOU, social influences, wireless trust, environment and facilitating conditions" were considered as an independent variable, and "intention to accept" the Wireless Internet Mobile Technology (WIMT) was taken as a dependent variable. The result of this research study showed that "Wireless Trust Environment, PU, PEOU, system complexity, and social influences" were directly related to the "acceptance" of WIMT. "Facilitating conditions" were also found as directly associated with the "acceptance" of WIMT but the association examined was found to be weak.

Ma & Liu (2004)[173] had conducted a meta-analysis on 26 studies on the TAM. 26 studies selected by the authors involved, direct or indirect empirical testing of TAM. The current study had examined the relationships in TAM with a large sample size by taking a sample of all 26 studies into consideration.

The results of the study showed a strong relationship between ″PEOU and PU", and between ″PU and Technology Acceptance (TA)", while the relationship was found as weak between ″PEOU and TA". Strength of these relationships were measured from three perspectives. First with ′Magnitude of mean effects ′which showed the large mean effects for ″PEOU and PU" and ″PU and TA", while the medium effect for ″PEOU and TA". Second test conducted was statistical significance of mean effect which was observed to be significant at 0.01 level of significance. And, third with a ″fail-safe test" which was found between 71-131 null effects for the mean correlation between ″PEOU and PU" and between ″PU and TA". However, the mean effect for ″PEOU and TA" did not pass the ″fail-safe test", which showed

a need of one more study reporting null effect which would lead to the effect being non-significant.

Wixom and Todd (2005)[174] had carried out a survey to examine use intention of data warehousing predefined reporting software. In order to examine the ″use behaviour intention", various effects were examined on the variables under this research study. Effect of ″information quality" was examined on ″information satisfaction", and ″system quality" on ″system satisfaction". Effect of ″information satisfaction" and ″system satisfaction" was further measured on ″PU" and ″PEOU" respectively. Effect of ″PEOU: was further measured on ″PU and attitude". Effect of ″PU" was measured on ″attitude and behaviour intention". The primary data were collected from total number of 465 respondents.

The results of the analysis showed ″completeness, accuracy, format, and currency" significantly related to ″information quality" and collectively accounted for 75 percent of the variance as in ″information quality". ″Reliability, flexibility, integration, and accessibility" too were found as significant determinants of ″system quality" whereas ″timeliness" was not. ″Information quality" and ″system satisfaction" revealed significant influences on ″information satisfaction" which accounted for 71 percent of the variance. ″Information satisfaction" too had a significant influence on ″PU". ″System satisfaction" had a significant influence on ″PEOU". ″PEOU" had a significant influence on ″PU" and ″attitude". ″PU" too had a significant influence on ″attitude" and ″intention". ″Attitude" was found as having significant influence on ″intention to use" the technology.

Mao, Srite, Thatcher & Yaprak (2005)[175] had explored key factors that influenced the "usefulness, ease of use, and intentions to use" advanced mobile phone services viz., "Mobile Internet Access, e-mail, and payments". Effect of mobile phone "efficiency" and "personal innovativeness" was explored on the "PU and PEOU". And, effect of "PU, PEOU, price, and accessibility" was measured on "intention to use" advanced mobile phone services.

Out of 273 student respondents, 130 students had studied in universities of Turkey and 143 students had studied in universities of USA. Research model was tested using SEM differently for Turkey and the USA. The results of turkey students showed the direct effect of "mobile phone efficiency" on "PEOU" but not the "PU". "Personal innovation" directly and significantly affected "mobile phone efficiency, PU and PEOU". "PEOU" also revealed a direct effect on "PU and intention to use" the mobile phone services, and "PU" was found having a direct effect on "intention to use", effect of "PU" was examined to be more than "PEOU" for the "use" of advance mobile phone services. Significant direct effect of "price" was examined on "intention to use" but not of "accessibility" for Turkey students. The results of USA students showed direct effect of "mobile phone efficiency" and "personal innovation on PEOU", and not on "PU". "PU" was found to be affected by "PEOU". While "intention to use" advanced mobile phone services were only found to be affected by "PU".

Kim & Malhotra (2005)[176] had developed two models, The First model, ″Two-Wave Panel Model"

shows individuals interact with a personalized Web-based information system over time. Model was developed by authors based on a ″dual-mode processing" paradigm which included the variables ″PEOU, PU, use and Behavioural Intention (BI) to use" the personalized web-based information. Model had focused on three types of processes for ″pre and post, sequential updating mechanisms (Pre-PEOU to Post-PEOU; Pre-PU to post-PU; Pre-BI to Post-BI)", ″feedback mechanisms in both Pre and Post (use to PEOU; use to PU; and use to BI)" " behavioural patterns (Pre-use to Post use)". It also studied whether ″behaviour intention" affected the ″future use" of the system as study by TAM.

In Wave-1, 298 responses were collected from students who were users of web-based information and were further processed. In Wave-2, which was conducted two months later, and in all 298 respondents, 189 responses which were complete were further processed. ″Means of Latent Variable Scores (MLVS)" were used to test the model.

It tried to examine that ″PEOU" was consistently a strong determinant of ″PU and BI" at both waves. No relationship was found between ″PU and BI" in the first wave, but a significant relationship was found between ″PU and BI" in the second wave. It was also found that ″intention" was no longer a determinant of ″future use" when ″past use" was taken into account. Premises of the sequential updating mechanisms, ″PEOU and PU" in the Wave-1 had positive impact on the same variables at the Wave-2. However, ″BI" of the Wave-1 was not influenced by the same variable measured of the Wave-2.

″USE" constantly and strongly influenced the TAM variables measured at the same time. While, ″Behaviour-Evaluation" feedback relationship between ″Pre and Post" were found to be substantial. ″USE" of the Wave-1 had a direct impact on ″USE" of the Wave-2 supporting the notion of ″repeated behavioural patterns".

Kim and Garrison (2008)[177] had developed a ″Mobile Wireless Technology Adoption Model" by Extending TAM. ″PEOU, PU, Perceived Ubiquity (PQ), Perceived Reachability (PR), Job Relevance (JR) and Behavioural Intention (BI)" were the construct of the model. ″PEOU, PU, PQ, PR and JR" were taken as an independent variable while ″BI" was taken as the dependent variable. For the purpose data was collected from 242 respondents working in a medium-sized Korean company. Their relationships among the variables were determined through SEM. The result of the data analysis showed that ″PEOU" was having a significant positive relationship with ″PU and BI". The relationship of ″PEOU" with ″PU" was found to be stronger than that of ″BI". The other entire construct ″PU, PU with JR, PQ and PR" too revealed a significant positive relationship with ″BI". It was examined that ″PU" had a positive significant effect on ″BI" than any of the other construct.

Lin and Lu (2012)[420] had examined ″Network Externalities" and ″Motivation theory" to identify the reasons for people joining social networks. For the purpose of this research study, the primary data were

collected from 402 respondents. “Network Externalities” which included a ″number of members, number of peers, perceived complementarity, perceived benefits which included usefulness and enjoyment” as well as ″continued intention to use” social networks were considered as variables under this research study. Through SEM, it was found that the ″number of members, number of peers, perceived complementarity” had a significant effect on the ″usefulness” of social networks. A ″number of peers and perceived complementarity” significantly affected ″perceived enjoyment” but the ″number of a member” did not. ″Perceived benefits” that is ″usefulness and enjoyment” were found as significantly affecting ″continuous use intention”. ″Network Externalities”, ″number of peers” too were found as significantly affecting ″continuous use intention” and not the other two.

Marshall, Moncrief, Rudd, and Lee (2012)[178] had examined changing phases of technology within the ″Sales Environment”, leading to the identification of social media as a dominant new selling tool through four focus groups. The research study explored the breadth of current technology use by ″sales managers” and ″sales individuals” for selling products of the organization. The research study had examined use of social media for ″connectivity relationships, selling tools generational, global and sales marketing interface” by sales managers and sales individuals.

Lorenzo-Romero, Constantinides & Alarcón-del-Amo (2011)[179] had examined factors affecting the acceptance of social networks. “Trust of users” was found as positively and significantly affecting “PU, PEOU, and attitude”. “Perceived risk” had revealed negative significant relation with “PEOU”, and “intention to use” the social network. “PEOU” was examined having significant positive effect on “PU, attitude and intention to use”. “PU” had shown a significant positive effect on “attitude and intention to use” the social networks. Effect of “PU” was found more than the effect of “PEOU” on “Attitude” but was less than “PEOU” on the intention to use the social networks. “Attitude” was found as positively and significantly affecting “intention to use” and “intention to use” was found as having a positive and significant effect on “actual use” of social networks. Thus, in this research study the authors had found effect of “PU” as mediated by the “attitude for intention to use” social networks.

Rizwan, Mir & Rehman (2012)[180] had proposed to extend TAM for developing a model for online shopping. They had suggested adding ″locus of control” factor affecting ″PU and PEOU”. ″PU and PEOU” should, in turn, be examined for their effect on ″attitude towards making online shopping” and ″attitude for online shopping” were proposed to be affecting ″future intention for users” for making online shopping. They had recommended to examine ″innovativeness and perceived risk” as an interim variable between ″attitude and intention affecting future intention” for making online shopping. Thus, when people are more ″innovative” they would prefer to make online shopping compared to those people who are ″less innovative” even though they are having a ″favourable attitude” for making online shopping.

Similarly, when individuals perceive online shopping ″less risky", they would make online shopping more compared to when they ″perceive online shopping as riskier".

Ghazizadeh, Lee and Boyle (2012)[181] had proposed the development of TAM to assess automation and authors had called the same as "Automation Acceptance Model (AAM)" by adding "compatibility, trust and feedback mechanism" based on prior experience of users to TAM constructs. The model was developed by author's stated external variables as independent variables which affected "PU, PEOU, compatibility and trust". "Compatibility" was suggested as affecting "trust, PU and PEOU" while "trust" was proposed as affecting "PU, PEOU, and behavioural intention to use" automated systems. The remaining construct as showed the same relationships as per TAM model. "Feedback" was based on the "actual use" of the system which was anticipated as affecting "compatibility, trust, PU, PEOU, and behaviour intention to use" the automated systems by the users.

Park and del Pobil (2013)[182] had examined users″ ′attitudes" towards ″tablet personal computers". They had identified the effects of ″external factors" that is ″perceived mobility", and viewing experience on ″PU and PEOU", effect of ″PEOU" on ″PU and attitude", effect of ″PU" on ″attitude and intention to use", and effect of ″attitude" on the ″intention to use". The primary data were collected from total number of 511 respondents and it was found that Perceived Mobility (PM) affected ″PU" more than ″PEOU". ″Viewing experience" affected ″PEOU" more than ″PU". ″PEOU" was found as affecting ″attitude" more than ″PU".

″PEOU" was also found as affecting ″PU" but the effect was less than that of the ″attitude". ″PU" was found as affecting ″intention to use", the effect of ″PU ″on the ″intention to use" was found as more than that of the ″attitude" of respondents.

Svendsen, Johnsen, Almås-Sørensen and Vittersø, (2013)[183] had investigated the degree to which users' assessments of the core constructs of TAM were influenced by measurement of the traits viz., "Extraversion, Consciousness, Agreeableness, Emotional Stability and Openness to Experience". It was found that "personality traits" influenced "Behavioural Intention (BI)" both directly and mediated through the "TAM beliefs". "Personality traits" also influenced "TAM beliefs" without influencing "BI". "Extraversion" was examined having significant, positive relations with "BI" and this relation was fully mediated by the "TAM beliefs" ("PU and PEOU"). "Emotional stability" was examined related to "BI", but this relation was not mediated by the "TAM beliefs". "Emotional stability" affected "PEOU" and "Subjective Norms (SN)" of the users of the technology. "Openness to experience" was found significantly and positively related to "PEOU", but did not influence "BI". "Consciousness" and "agreeableness" too were examined significantly and found as positively related to "PEOU" and "SN" but did not influence "BI". Significant negative relation was found between "openness to experience" and "SN". And, "PU" was found to be affecting "BI" more than "PEOU" and "SN" respectively.

Howell (2016) had examined social network users of the age group of 16 to 74 years of USA and found significant and positive effect of "PEOU" on "PU", effect of "PU" and "trust" on "attitude", and the effect of "attitude" on "BI" of social network users.

Weerasinghe and Hindagolla (2018)[184] in their review study for the selected study on TAM, researchers found "PEOU" and "PU" as significant determinants for adoption of social networking websites by social network users in majority of the studies.

Some of the studies under review also took "enjoyment and or playfulness, social influence, trust, autonomy, and demographic variables viz., age and gender" to study the adoption of social network users. The study under review found this construct playing important role in determining behaviour intention of social network users for adoption and use of social networks. Some review study took experience as a moderator and found it too playing an important role in the determination of user behaviours towards social networking site adoption and acceptance.

Perceived usefulness is one of the core variables in TAM to explain the behavioral intention. Perceived usefulness is considered to be the most important variable in Technology Acceptance Model. As defined by Davis (1989)[109], "the degree to which a person believes that using a particular system would enhance his or her job performance". The relationship between perceived usefulness and satisfaction was studied by Agrebi and Jallais (2015)[160] in the context of mobile commerce and dynamics of m commerce by (Turel, O. and Yuan, Y. (2006)) [185].

As users of technology gained more experience in the applications, they are less likely to be dependent on the influence of the messages that were floating in any social media. In turn, their perception of usefulness was built on their experience with the technology.

This concept was later modified and developed into Unified Theory of Acceptance and Use of technology. The key determinants to adopt a particular technology was based upon "Performance Expectancy", "effort expectancy", "social influence", "hedonic motivation", "facilitating conditions" and "price" (Venkatesh, V. and Davis, F. D., 2000)[165]

All these studies proved that "perceived usefulness" is one of the vital "predictors" in the intention to use the technology. Perceived usefulness has a substantial optimistic influence on "satisfaction" in adopting "mobile shopping applications". "Dai and Palvi (2009)[186] had empirically shown the connection between "perceived usefulness" and the" intention to use mobile phones" in the environment of mobile commerce. A "meta-heuristic study" carried out by Zhang et al. (2012)[187] also exhibited the important of the positive relationship between "perceived usefulness" and "the intention to use mobile phones" for shopping purposes. He further studied that the positive relationship between "perceived usefulness" and "intention to use e-commerce websites for shopping". Thakur and Srivastava (2014)[29] conducted a study on "accepting mobile payment in India". The study revealed that the "intention to adopt mobile payment" and "perceived usefulness" are significantly related.

An attempt was made by the researcher in the following part to provide brief description on selected important research studies on "Perceived Usefulness (PU)". "Perceived usefulness" was one of the

important constructs of Technology Acceptance Model developed by Davis in 1989 has defined "perceived usefulness" "as the degree to which an individual believes that using a particular system would enhance his or her job performance." Theory was basically developed by the author to identify acceptance of technology when the technology was new for the users. Hence, he suggested considering "PU as inferential in nature, requiring respondents to estimate the effect of the system on their job performance in the absence of any direct experience of using the system in their job". Significant correlation was found between "PU and PEOU" with "self-reported current use" and "self-predicted future use" of technology. "Behaviour for use" of technology was examined to have significantly greater correlation with "PU" than the variable "PEOU". The analysis suggested that "PEOU" may actually be a causal antecedent to "PU", as opposed to a parallel, direct determinant of system use (Davis, 1989)[109]. Davis, Bagozzi, and Warshaw (1989)[164] had conducted a longitudinal study on social network user′s ″intentions to use" a specific system of total number of 107 users. Constructs were measured after one-hour introduction to the system and after 14 weeks of introduction. ″PU" was again examined to have a strong influence on social network ″use intentions", explaining more than half of the variance in intentions at the end of 14 weeks. ″PEOU" had a small but significant effect on ″intentions" as well, although this effect subsided over time. This suggested that, when social network users were using technology for a long period of time, ″PU" can be taken as a construct for measuring their ″intention for continuous use" of technology.

Szajna (1996)[188] in the longitudinal study also found ″PU" as strong determinant of ″intentions to use" than ″PEOU" by testing TAM on acceptance of e-mail by college students.

Agarwal and Prasad (1999)[144] through their modified TAM found three variables concerning individual differences viz., "Role with regard to technology, level of education and prior or similar experience" having significant effects on "PEOU". And "PEOU" was found as significantly predicting "PU and attitude". "PU" was still examined to be a significant predictor of "intentions to use" the innovation. This research study had examined the role of level of education and prior or similar experience with such technology in understanding and using the technology. Using the technology with clear purpose helped social network users to get an advantage that they wanted from the use of technology and hence technology was perceived more useful compared to the other users and these users were having a more positive attitude for the use of technology.

Igbaria et al (1997)[189] had examined the acceptance of personal computing technology by small firms. They had found "PU" and "PEOU" as an important in mediating the relationship between "inter and extra organisational factors" and "actual use" of the system.

Adams, Nelson and Todd (1992)[111] had presented findings of two studies undertaken by Fred Davis on "PU, ease of use, and use of Information Technology (IT)". Both these studies had focused on

evaluating the “psychometric properties” of the “ease of use and usefulness” scales while examining the relationships between “ease of use, usefulness, and system use”. The research study found convergent validity of the two scales by examining “heterogeneous” social network user groups dealing with heterogeneous implementations of messaging technology. The result of the research study-1, suggested “usefulness” as an important determinant of “system use”, whereas result of study-2 was somewhat mixed, but indicated the importance of both that is “ease of use” and “usefulness” in the adoption of messaging technology.

Hendrickson, Massey, and Cronan (1993)[112] had reported on “Test-retest reliability of PU and PEOU scales”. The study did not find the result of “PU and PEOU” on individual scale high. But, it found the sub-scale correlations to be very high, when both were combined with a minimal number of significant mean differences for items, test-retest reliability of TAM was found to be high.

Subramanian (1994)[114] had observed “PU” and not “perceived ease to use” as a determinant for predicting future use of technology.

Chau (1996)[171] had divided ″PU” into two viz., ″long-term and near-term” for testing acceptance of Microsoft Word and Excel in a large organization. They had found that ″near-term usefulness” had more effect on ″behaviour intention” than ″long-term usefulness”. They had also examined positive effect of ″near-term usefulness” on ″long-term usefulness”. They had proposed the development of TAM for the wireless Internet by these two types of ″usefulness”. They had suggested measuring the effect of ″near-term usefulness” and ″long-term usefulness” on ″attitude” and ″behaviour intention” of users of wireless mobile devices.

Zhou (2014)[190] had examined the effect of ″network externality” on social network users″ ′continuance use” of mobile social networks.

The author had studied the relationship between ″network externality” (direct and indirect network externality) which was measured by referent ″network size” (number of friends and peers in a user′s personal circle that adopts a mobile social networks) and ″perceived complementarity” (availability of more functions and applications to enrich mobile social networks experience) with ″PU” and ″flow” (obtain great enjoyment and time elapses) which in turn was measured with ″continuous use intention”. Effect of ″privacy concern” was also examined with ″PU, flow and privacy risk” which in turn was observed with the ″continuous use intention” of social network users. The finding of this research study revealed significant relationship among the variables except for ″perceived complementarity” and ″continued use”. Positive relationship among the variable was found except that of ″privacy concern” with ″PU” and ″flow”; and ″privacy risk” with ″continuous use”.

Gefen and Straub (2000)[191] had examined "e-Commerce adoption" by studying importance of "PEOU" information technology. "PU" and "PEOU" variable of TAM were taken into consideration for understanding the "adoption of e-Commerce". The researcher had found that "PEOU" was dependent upon the "intrinsic characteristics" of IT such as "ease of use, ease of learning, flexibility, and clarity" of its interface while "PU" was dependent upon the "extrinsic characteristics" viz., "task-oriented outcomes, achieving task-related objectives efficiently and effectively". This study had explained direct effect of "PEOU" on IT when task itself was an integral part of an IT interface that is when the website was used to inquire about products, "PEOU" affected "IT adoption" because the required information was embedded in the website, and thus its quality was directly related to its "ease-of-use".

Barkhi, Belanger and Hicks (2008)[421] in their research study described consumer purchase decisions in a virtual store. The results of the analysis described that "PU, Perceived Behavioural Control (PBC), and Perceived Peer Influence (PPI)" impacted on "attitude toward purchasing" from a virtual store. "Attitude toward purchasing" from a virtual store, in turn, influenced the "actual purchasing" from a virtual store.

Lee, Park and Ahn (2001)[192] had developed an "e-Commerce Adoption Model (e-CAM)" to examine important factors predicting consumer's online purchasing behavior.

The model integrates TAM with theories of "perceived risk" to explain the "adoption of e-Commerce". "PEOU, PU, perceived risk" with products or services, and "perceived risk" in the context of the online transaction were taken as variables for predicting "consumer online behavior". The findings of the research study showed significant and direct effects of "PU", perceived risk with products or services, and perceived risk in the context of online transaction" on customer's "adoption of e-Commerce" while "PEOU" had an indirect effect on the customer's "adoption of e-Commerce" by mediating "PU".

Pavlou (2003)[193] had displayed consumer "acceptance of e-commerce" by proposing a set of key drivers for engaging consumers in on-line transactions.

For proposing a set of drives, "Theory of Reasoned Action (TRA)" and "Technology Acceptance Model (TAM)" was taken into consideration to examine variables like "PU, PEOU and perceived risk played" an important role in "e-Commerce acceptance".

Lim and Ting (2012)[194] had employed TAM to "identify factors influencing customers to accept and make use of systems developed and implemented by others". The research study was conducted to examine the relationship between "PEOU", "PU", "attitude towards online shopping", and "customers' intention to shop online" in Malaysia. The findings of the research study revealed significant relationship between "PEOU" and "PU" on "attitude towards online shopping" which in turn affected "intention of customer for online shopping".

Venkatesh, Morris, Davis and Davis (2003)[167] had developed "Unified Theory of Acceptance and Use of Technology Model (UTAUT)" based on "performance expectancy, effort expectancy, social influence, intention facilitating conditions and use behaviour" of the individuals. "Perceived usefulness" was included in "performance expectancy". The study found direct effect of "performance

expectancy", "effort expectancy", and "social influence" on "intention to use", "Intention" and "facilitating conditions" directly affected "use behaviour" of the individuals using technology. It was also found that "experience, voluntariness, gender, and age" played a moderating role in the "acceptance of technology". Thus, "perceived usefulness" was once again examined directly affecting "intention to use" technology.

Doll, Hendrickson and Deng (1998)[195] had found a difference in the "perception of usefulness" based upon the "different software systems adopted" by the users. "Adoption" also differed among the users based upon their prior experience with "systems, novices and prior computing experience" of users. Though, no difference for "perceived usefulness" was found among the users based on the "gender" of the users.

Lewis, Agarwal and Sambamurthy (2003)[196] had suggested that "individual", "social" and "institutional" factors affect "beliefs of use" of technology. They had viewed "PU" as beliefs concerning "instrumental outcomes" associated with "use of technology" and "PEOU" as beliefs that "use of technology" would be comparatively free of "cognitive burden". The researchers found the effect of "social" that is "departmental peers, informal circle, professional peers, supervisor and senior leader", and "institutional" that is "top management and local management commitment" on "PU", effect of "individual factor" that is "computer self-efficacy and personal innovativeness" on "PU and PEOU", and effect of "PEOU" on "PU". The result of the research study demonstrated a significant positive effect of "Top Management" on "PU" but did not have any effect on "PEOU". "Local Management Commitment" positively and significantly affected "PEOU" but did not have any effect on "PU". None of the "social norms" affected "PU or PEOU". "Individual factor", "Computer Self-efficacy" had a significant positive effect on "PEOU" but no effect on "PU", while "personal innovativeness" had a significant positive effect on "PEOU and PU", and "PEOU" was not found affecting "PU". The results of this study were quite different than the other studies which showed the significant positive effect on "PU".

Hsu et al (2004)[197] had applied "TAM" that incorporated "social influences" and "flow experience" as belief related constructs to predict users' "acceptance of online games".

Their results discovered significant direct effect of "social norms, attitude and flow experience" on "intentions to play online games". "PU" did not motivate users to "play online games", but directly affected their "attitude". "PU" was anticipated as a factor affecting "acceptance of online playing". Players would play online games only if they found it "useful" and if it could only satisfy their "fancy or leisure". But from the analysis of the data, it was examined that "PU" did not motivated user to "Play Online Games" thus online players were found playing online games without any purpose. They had examined factors affecting the "adoption of broadband access" at "individual level". This research study integrated views on "adoption and diffusion of technology", including the "TAM, the theory of planned behavior and diffusion of innovation model". An "extended technology acceptance model" incorporating the notion of "perceived resources" proved to be relevant in the "adoption of broadband

technologies". It was examined that "Innovation Attributes", such as "Compatibility, Visibility, and result demonstrability", had an impact on constructs in the "extended technology acceptance model" such as "PU, PEOU and perceived resources". The results of the research study supported the idea that "Congruent Experiences" and "opportunities" in adopting a new technology affect user's "attitudes" through the three extended technology acceptance model constructs as mentioned above. The researchers have suggested making an effort to expand the "compatible experience" base of broadband Internet in order to facilitate its "adoption" and "use".

Pikkarainen et al., (2004)[422] had investigated "online banking acceptance" taking "TAM" and developed a model indicating "online banking acceptance" among private banking customers in Finland. The findings of the research study indicated "PU" and "information" on online banking on the website were the main factors influencing "online banking acceptance".

Awamleh and Fernandes (2006)[198] had examined factors influencing "intention to adopt" and "continuation to use" Internet Banking facility by "users and non-users" in the United Arab Emirates. The research model was developed taking "TAM, theory of planned behaviour and computer self-efficacy" from "social cognitive theory" as a base.

Seven factors viz., "computer self-efficacy, image, PEOU, perceived risk, PU, results in demonstrability and subjective norms" were determined to study the "adoption of the facility" by "potential user". The factor analysis was applied to analyse the data and it was found that "relative usefulness, perceived risk, computer efficacy and image" had a significant impact on "continued use of facility", while "relative usefulness and result demonstrability" were the only ones that were found significant for "non-users of the facility".

Suh and Han (2003)[199] had investigated the effect of "trust" on "customers' acceptance of Internet banking" in Korea by incorporating "trust" into the "TAM model". Their results indicated "trust, PU and PEOU" as significant determinants of "attitude". "Attitude and PU" had a significant effect on the "intention", and "intention" had a significant effect on "actual use". A similar study was carried on by Eriksson et al., (2005) in Estonia which showed a positive effect of "trust" on "PEOU and PU".

The findings of their study pointed out "PU" as the primary determinant of "use of the Internet Banking facility" by the customers of Estonian bank.

Bhattacherjee (2001)[200] had conducted a research study to identify the role of "confirmation" on "use intention of online banking facilities". For the purpose, effect of "confirmation" was measured on "perceived usefulness" and "satisfaction" with the "online banking system" which in turn affected "use intention" of the system. The study found significant positive effect of "confirmation" on "PU and Satisfaction". "Satisfaction" from online banking had a positive greater effect on "intention to use" than on "PU" of an online banking system. This study identified "satisfaction" as the strongest predictor of "intention" than "PU".

Wang et al., (2004)[201] had extended TAM by taking "perceived credibility" with "PEOU" and "PU". "Perceived credibility" was reflect through "security and privacy concerns" in the "acceptance of

Internet Banking". The research study had found significant effects of "PU, PEOU and perceived credibility" on "behavioural intention to use" with "PEOU" having a stronger influence than both "PU and perceived credibility". "Perceived credibility" was examined to have a stronger influence on "behavioural intention" than "PU" in the "use of Internet Banking facilities" by the customers. The research study suggested taking factors like "easy interaction, trustworthy protection and privacy for the users" into consideration for attracting customers to "use the facilities". Its results revealed "positive beliefs of usefulness" and "ease of use" for users who had higher "computer self-efficacy", but these users were found generally perusing negative belief about the "credibility of Internet Banking".

Rose and Fogarty (2006) [202] had examined "senior consumers' acceptance" and "use of" "Self-Service Banking Technologies (SSBTs)". Result indicated "self-efficacy, technology discomfort, perceived risk and personal contact" as determinants of "PEOU and PU". These were also found to be a "direct determinant of attitude" and "indirect determinant for intention to use" SSBTs.

Selim (2003)[203] had used TAM constructs "usefulness" and "ease of use" to assess university students' "acceptance of websites as an effective learning tool". The research study had used "Course Website Acceptance Model (CWAM)" to identify the acceptance and used of course website. The research study had found "Academic syllabus", "Course website usefulness" and "Ease of use" as key determinants affecting "acceptance and use of Academic course website"

Kang and Lee (2010)[204] had proposed a model by extending the "user satisfaction perspective" into research on "online service continuance". Model helped in framing "customer retention strategy" through "website design" and "investment decisions". Model was tested within the context of "social network services". Website "information satisfaction" and "system satisfaction" was found important for "continuance intention". The relationship among the variables was mediated through "PU" and "perceived enjoyment" of social networking services. It was noticed that "computer anxiety" served as an important moderator toward "continuance intention of use" of such services.

Liao, Huang, Chen, and Huang (2007)[205] had explored "behavioural models" associated with "using social network websites" in a "ubiquitous learning context".

The research study had extended "TAM", adding "perceived playfulness" as an independent variable. "Personal Innovativeness in Information Technology (PIIT)" was taken as variable affecting "PEOU and perceived playfulness", and "collective efficacy" was taken as variable affecting "PU, PEOU and perceived playfulness". Its results showed direct and significant relationship among the variable accept between "PEOU" and "learning attitude". "Perceived playfulness" affected more on "learning attitude" than the "perceived usefulness" of website.

Lambic (2016)[206] had investigated the relation between the "academic performance" of students and the "frequency of use of Facebook" as a "learning aid". The research study was also carried out to know the effect of "PU" on frequency of use of the social network application as the learning aid. The research study had examined positive significant effect of "PU" on "frequency of use of Facebook" as a "learning aid". But no relation was found between the "frequency of use of Facebook" for "general purposes"

and the "academic performance" of respondents. "Use of the Facebook" affected negatively to the "academic performance". Poor "academic performance" cannot only be due to the use of social network hence, the research study had suggested taking other factors into consideration for identifying the reason for poor "academic performance" of the respondents.

Keefa, Mayoka, and Ibrahim (2016)[207] had examined the influence of "PU" on the "adoption of social networking technologies" in institutions of "higher learning" in Uganda. Its findings indicated a positive and significant relationship between "PU" and "social networking technologies adoption" in these institutions.

Sledgianowski and Kulviwat (2009) [208] had examined factors influencing "adoption of social networks". This research study introduced "social network websites adoption model" to examine the effect of "perception of normative pressure, playfulness, critical mass, trust, usefulness, and ease of use" on "use intention and actual use" of these sites. Determinants were found having a significant direct effect on "intent to use", with "perceived playfulness" and "perceived critical mass" as the strongest indicators. "Intent to use" and "perceived playfulness" were found having significant direct effect on "actual use of social networks".

Rauniar, Rawski, Yang and Johnson (2013)[209] had proposed a "revised TAM framework" for improving understanding of a social network application user's "attitudes toward use". The study identified positive relationship between "PEOU, critical mass and capability" of social network application with "PU" of the site.

"Perceived playfulness" of social network application was found positively related to "perceived benefit". "PU and trustworthiness" of social network application were also found positively related with "intention to use" social network application, and "intention to use" social network application was found positively related to the "actual use" of social media.

Forsgren and Byström (2011)[210] had studied "conventional professional work practices" and "hesitant attitudes" and "feelings" related to the introduction of a social media tool for "communication and collaboration" in the organisation. Investigation was carried out in Electronic industry by studying an international product development company. This study divided "social media discomfort" into factors relating to areas of "social interaction (socialness)" and factors "mirroring a goal-orientation in attending to work duties (usefulness)". Its results indicated that individuals rejected new social media tools when they perceived tools as "disconnected" to established "structures, tools, norms and ideas shared in the workplace". The problem was generally faced by the companies at the time of adoption of new social media.

Brown Sr., Alkadry and Resnick-Luetke (2013)[211] had collected responses from total number of 191 public administrators to study and examine relationships between "participation in social networking

activities" and five constructs viz., "PU, PEOU, Perceived Improvement Potential (PIP), intra organizational trust, and type of use" respectively.

The research study found favourable model fit statistics that supported positive relation between the "latent variables" that were examined viz., "PU, PEOU, PIP, intra organizational trust, and type of use", and "participation in social networking activities".

Chen, Fan and Farn (2007)[212] had examined "Integrated Technology Acceptance Model (ITAM)" and "theory of planned behaviour" to study the "motorists' intention to use electronic toll collection service". This research study found that "system attributes, PU and PEOU" positively engendered motorists' "attitudes towards electronic toll collection service adoption".

Its results revealed a positive influence of "attitude, subjective norm and perceived behavioural control" on "intention for adoption of electronic toll collection system".

Trainor (2012)[213] had studied "usefulness" of social networks in "managing and enhancing customer relationships". He had examined influence of social networks on "Customer Relationship Management (CRM)" which further influenced the "performance of the companies". "Influence" was determined by studying effect of viz., "Sales and Marketing-centric technology, Customer-centric technology resources, Sales or Marketing-centric and customer-centric technology resources, Customer-centric technology implementation and Firms". The research study had also examined relationships between "social CRM capabilities and customer-based profit performance; customer based relational performance, and new product performance mediated by co-created customer experiences". The research study was useful for the businesses as it showed the practices of integrating traditional CRS with social networks to enhance the performance of the business.

Kim, Chun and Lee (2014)[214] had examined "smartphone adoption behaviour" among American college students by combining all components of "Innovation Diffusion Theory (IDT), the TAM, the Value-Based Adoption Model (VAM), and the Social Influence (SI) model". Its findings revealed that all variables of "TAM, VAM, and SI" varied across the adopter groups, "current adopter's mean values of the variables were the highest, followed by those of potential and non-adoption groups".

The research study had examined "perceived value" and "affiliation" mainly determined the different "perception of adoption groups". "Smartphone adoption", however, was comparatively unaffected by "PEOU and PU". "Perceived Popularity, Perceived Price, and Ethnicity" played a role in distinctive determinants between "current adopters and non-adopters". The results of the research study had inferred that adopters believe smartphones as symbolic and worthwhile device.

Chang, Hung, Cheng and Wu (2015)[215] had integrated the concepts of "conformity tendency" and "perceived playfulness" into the TAM to explain reasons people "continued to use" social networks. Its results revealed that for "conformity tendencies, informational influence promoted continued intention to use" social networks through "PU", not through "normative influence".

"PEOU" was the primary factor that predicted reasons for users to "continue use" of social networks, and "perceived playfulness" facilitated users' "continued intentions to use" social networks.

Shibchurn and Yan (2015)[216] had applied the "intrinsic-extrinsic perspective" to examine "information disclosure intentions" by online social network users. "Voluntary disclosure" was tied to the "intrinsic value" that users attributed to their "social networking activities" while "reward motivation" was a form of "extrinsic value" for the disclosure. The researcher had developed a model to assess the effect of "intrinsic and extrinsic motivations" on "disclosure intentions" in reward-based settings.

This research study had found a positive relation between "reward-level" and "disclosure intentions" whereas "extrinsic motivations" had insignificant effect on "disclosure intentions". The research study had inferred "information ambiguity" and "reward-amount ambiguity" as important factor influencing "disclosure intentions" of social network users.

Mishra and Tyagi (2015)[217] had tried to recognize the potential contribution of "online social networks as marketing tools". They had examined impact of "PU, perceived risk and personal fit" with brand for marketing through social networks and its effect on "attitude" of social networks users. The research study had directed positive and significant effects of "PU", and the negative effect of "perceived risk". Further, "PEOU and personal fit" with brands were found having a positive effect on "marketing" through social networks but their effects were insignificant.

Adjei, Annor-Frempong and Bosompem (2016)[218] had examined the factor that determined "use of social networks" in Ghana. They had applied "TAM model" to determine the best predictor of the extent of use of social networks among Non-Government Organizations (NGOs) in Ghana. The finding stated "ownership of a website, PU of social networks and type of NGO" as major determinants of "use of social networks".

Boase, Horrigan, Wellman, and Rainie (2006)[219] had surveyed "social ties" of two types viz., "Core ties (very close relationships) which captured three key dimensions of relationships strength viz., emotional intimacy, contact, and the availability of social network capital". The "social tie" was found as "significant ties (somewhat closely connected)" and "In-person encounters and landline telephones". Yet, new communication technologies viz., "e-mail, cell phones, and Instant Messaging (IM)" were found playing important roles in "connecting social network members".

Min and Kim (2015) [220] had studied three "Enticements" viz., "motivation of relationship management through social networks, PU of social networks for self-presentation, and subjective social norms" of using social networks.

The research study had found "motivation of relationship management through social networks" and "PU of social networks for self-presentation" lead users to "disclose information". But, no effect of "subjective social norms" was found on "disclosure of information" by social network users. The research study suggested integrating "perceived benefit of behaviour enticements" into the social network users' to increase the use of social network.

Mouakket (2015)[221] had focused on "continuance use intention" toward "Facebook", among the university students in the United Arab Emirates. This research study had extended the "Expectation-Confirmation Model (ECM)" by investigating the influence of "enjoyment and subjective norms" as

"critical factors" directly influencing "continuance use intention" and added "habit" as a mediator between "satisfaction" and "continuance intention".

The findings of this research study revealed that "confirmation" had significant effect on "PU and satisfaction", influence of "PU on satisfaction", influence of "PU, satisfaction, subjective norms, enjoyment and habits" on "continuance intention to use" the social networks respectively.

He had investigated "negative effect" created if any, by the use of social networking websites viz., "Facebook, Twitter, MySpace and LinkedIn" on the life of individuals (employees). It was found that very few individuals believed that social networks had "negative effect" on their personal life. On the contrarily they believed that social networks had helped them to be more social. Due to social networks, they can stay connected with their "friends, had leisure when they were alone, made new friends and found recruiters for employment".

Chang and Heo (2014)[222] had explored "disclosure behaviour" on Facebook and provided understanding for the factors that contributed to explaining such behaviour. The "disclosure factors" taken in the study were "different motives such as social, hedonic, utilitarian, Social and investigation as well as time spent, number of Facebook friends, perceived benefits of use, trust, perceived risks of use and Gender difference". The finding of this study revealed a significant relationship between "different motives" as well as "time spent, number of Facebook friends, perceived benefits of use, trust, perceived risks of use and Gender differences" on the "disclosure of personal information" on Facebook.

Ariff, Shan, Zakuan, Ishak & Wahi (2014)[223] had measured the effects of "PEOU, PU and Perceive Enjoyment (PE)" on "e-Satisfaction (eSAT) in use of Facebook" among the Facebook's users who were aged between 18 - 24 years. The effects of "PEOU" on "PU and PE" were also examined. The results of this study indicated positive effect of "PEOU" on "PU and PE" in the context of Facebook. In addition, "PEOU, PU and PE" were found as having positive effects on "eSAT". "PE" of "hedonic information system" exerted a higher effect on "eSAT" compared to "PEOU and PU" of the "utilitarian information system" and its result highlighted the importance of "pleasure orientation" in the "use of Facebook".

Yang and Brown (2015)[423] had identified dimensions viz., "seeking information about peers, communicating with friends, pursuing new relationships, and gaming with others" for "Facebook usefulness" that facilitated "social activities". "Social competence" was posited to be positively associated with "college adjustment" but this relationship was found mediated by the "specific ways" in which students "used Facebook" which in turn was "contingent on students' perception" of "Facebook's usefulness" for various "activities or objectives".

Sullivan & Koh (2019)[224] had studied the effect of "perceived usefulness" and "perceived enjoyment" on "perceived communication quality" and "continuance intention to use" social networks. The research study had found positive and significant effect of "perceived usefulness and perceived enjoyment" on "communication quality". "Perceived enjoyment" was found as having significant positive effect on

"continuance use intention". Whereas "perceived usefulness" was examined having insignificant effect on "continuance use intention" of social networks.

2.9: REVIEW OF LITERATURE ON PRICE IN OF M-COMMERCE:

Determining price of a product is key factor of success in any market especially in the markets of the developing world (Roy et al, 2016)[225]. In mobile shopping, mobile shoppers had limited option to compare the price of the listed product with the actual price. Mobile shoppers with high price sensitive would look for products that are cheaper compared to the mobile shopper who were less price sensitive. "Price sensitivity" is a variable measure with individual differences and "the way in which buyers react to prices and to price

changes" (Goldsmith et al., 2005)[226]. "Price sensitivity" points the users vary among "different people", "products", "needs", "brand credibility", "income levels" and "time" (Erdem et al., 2002; Petrick, 2005).

Authors analyzed the variations in the "price sensitivity" of the mobile shoppers as they begun to use mobile shopping applications. Price sensitivity was less explored within TAM model. Pricing of a product is very sensitive that determines the sales in developing countries. (Armstrong, 2009). Therefore, it is optimal for the firms to choose a successful strategy to acquire the sales and increase profit. Companies should measure the "pricing sensitivity" because it is a "core variable" in developing a marketing strategy. To maximize the profit, firms can adopt a strategy called "differential pricing" that can be defined as "the practice of charging customers different prices for essentially identical goods" (Hoffman et al., 2002). A products' price can be adjusted as per "type of customer", "location", "time" or "product" (Armstrong, 2009). While segmenting mobile shoppers on the basis of "differential pricing", customers with high price sensitivities should be given very careful attention so that the market is not lost. Weng et al (2015) said that Smartphone users who adopted mobile shopping tend to make it as a habit. When a mobile shopper planned to adopt a product that was unknown to him, the price of a new product would have great influence in their desire to adopt the product. "Price sensitivity" would change the intention of a Smartphone users' to adopt a mobile shopping application.

The study by Erdem et al. (2002)[227] tested "the importance of brand credibility on price sensitivity". This study conceived the thought of "credibility of a brand" that played a key role in reducing the "perceived risk" that resulted in reducing "price sensitivity". Mobile shopper would limit their spending on the items on which they are uncertain about the brand name and the quality. "Perceived risk" is more on a new product or technology, in terms, it influenced "price sensitivity".

2.10: REVIEW OF LITERATURE ON TRUST IN M-COMMERCE:

Adopting any new technology poses threats to any user. Threats like malware and spyware were getting downloaded. There is another risk of data getting stolen from the device. According to M. Warkentin et al (2002)[1], "risk can be defined as "consumers' subjective expectation of suffering a loss in pursuit

of a desired outcome". Studies have identified that perceived risk of consumers in adopting any new technology will influence negatively in adoption of the mobile applications and conducting any transactions. When the perceived risk decreases the intention to adopt a new technology will increase (Aghekyan-Simonian et al, 2012)[228,]

Since mobile commerce is carried out on smartphone without having any face-to-face interaction, trust and security play a vital role in it. Trust was one the key drivers that encouraged Smartphone users to become mobile shoppers. Trust was a key factor in handling bank transactions on a handheld device like Smartphones. In this section of the chapter, the research scholar has made an effort to study and understand the trust and security factors in adopting and involving in mobile commerce activities. There are numerous research articles, and materials available to know the importance of trust in entering into the new innovative business mode of mobile commerce. Krishna Prakash and Balachandra (2015)[229] probed the safety problems and other practical difficulties in adopting mobile computing and involving in the activities of m-commerce. As per M. Niranjanmurthy & Kavyashree (2013)[230], "security of e-commerce can be considered as shield of e-commerce properties from any unlawful access". "M-commerce can be considered as carrying out commercial activities on a mobile device". (P.P. Parameswari, 2015)[231]

Lack of trust was another important hindrance while adopting wireless business environment (Holtjona Galanxhi-Janaqi and Fiona Fui-Hoon Nah Article, 2004)[57] P.P. Parameswari (2015)[231] investigated the apps and the security issues in her research paper titled "M-Commerce in Apps and its security issues". The author suggested that "M-Commerce needs some development in secured transactions and better shopping experiences". The author analyzed speed, security, strength, and mobile networks in m-commerce.

David Martin-Consuegra, Mar Gomez and Arturo Molina (2015)[232] probed the consumer sensitivity in their research paper titled "Consumer sensitivity analysis in mobile commerce advertising". They had collected samples from 395 young adults.

Authors said, " mobile shoppers were worried about the illegitimate use of data they provided to companies to conduct sales through the cellular phone or simply to take advantage of offers, with this sensitivity to information requests varying according to the increased or decreased level of worry"". They also argued that " mobile shoppers can reject m-commerce to protect their privacy when agreeing to m-commerce advertising".

Zanot, E.J.(1981)[233] studied public views toward advertising. M-commerce broke the limitations of space and time levied by more traditional forms of commerce. The benefits of novel information and communication technologies had created an extraordinary surge mobile commerce in recent years, considering customers with new methods of interacting with firms with more agile. They were able to develop a personalized communication with the instituitions (Bigné, Ruiz, & Sanz, 2007; Bojei, Julian, 2013; Gerpott, 2011; Daid Martin-Consuegra, Mar Gomez and Arturo Molina, 2015)[353,235,236,237]

Security would become a more critical issue, as data sharing and device capabilities spread (Stone, 2001)[238]. It concerned the privacy of personal data that was asked while executing payment activities (Udo, 2001)[424] Gefen, D.; Karahanna, E.; and Straub, D.W. (2003)[239] analyzed the "trust in online shopping". Lippert, S.K (2001)[240] had done an "exploratory study" into the "importance of trust in the context of information systems technology". The result supported the earlier finding that trust and social interaction had optimistic effects on sharing the knowledge in e-comm knowledge sharing (Chang and Chuang, 2011)[241]. Xuefeng Zhao, Qing Tang, Shan Liu, & Fen Liu, (2016)[242]; Antonio Ghezzi, Filippo Renga, Raffaello Balocco and Paolo Pescetto (2010)[243] argued in their research paper titled "Mobile payment applications: offered state of the art in the Italian market", mobile shoppers were reluctant to adopt m-payment due to requirement of registration to provide information such as personal data, "telephone number", and "preferred payment tool" (credit card data, car number plate, etc.). mobile shoppers were not ready to put efforts into a service they might use only once. Firm inhibitory factors and accepting barriers were still restricting user in adopting m-commerce, notwithstanding the many advantages related to these services.

Substantial amounts of literature were available to understand the issues faced in technical aspects. This type of research largely deals with issues including non-repudiation, authentication; integrity; and confidentiality (Panduranga, 2005)[244].

Lu, Y., Yang, S., Chau, P. Cao, Y. (2011)[245] compared "the trust transfer process" and purpose "to use mobile payment services: a cross-environment perspective." Wang, W., and Benbasat, I.(2005)[246] discussed "trust and adoption of online recommendation" factors. Besides, the improvement of the safety in mobile payment had also occurred in risen use of wireless devices to give m-commerce. Komiak, S., and Benbasat, I (2006)[247] analyzed "the results of personalization and awareness on trust and adoption of recommendation agents".

Lee,S, & Park,S. (2006)[92] studied "improving the accessibility and security for mobile phone shopping". mobile shoppers could access the online market, browse through goods, avail any services, anytime and anywhere. Mobile commerce had a special characteristic that was ubiquity which had the various dimensions of reachability, immediacy, portability, and continuity.

When a customer receives continuous service, it satisfies the dimension of continuity, immediate action to and purchase option with less effort and easy way serves the dimension of immediacy. Mobile devices can be carried to all the places any time which fulfils the portability dimension. A consumer can search the relevant information all the time that enables the solid dimension of searchability. S. Wang, L. Fan (2010)[248] analyzed solutions to mobile e-commerce security problems.

Yuan, S. T. and Cheng, C (2004)[249] reviewed personalized "clustering for heterogeneous" goods endorsement in mobile marketing. Trust was also crucial and driving factor in adopting mobile commerce. Service providers should gain the trust of the mobile shoppers; otherwise, mobile shoppers

won't use mobile shopping apps for their shopping needs. Authors had developed a table of contents that had different types of mobile applications with aspects to mobile marketing, mobile entertainment, mobile banking, and other offered services.

Cozzarin and Dimitrov (2016)[250] discussed that online security and the cost difference would affect the adoption of m-commerce. The perceived risk in mobile shopping impacted the purchase decision compared to desktop-based shopping. Lee, T. (2005)[251] analyzed influences in opinions of inter-activities on mobile shoppers' trust and purchasing desire in m-commerce.

Gianluca Lax and Giuseppe M.L. Sarné (2008)[252] in their research paper titled "CellTrust: a reputation model for C2C commerce" discussed "the development of wireless technologies and the increment in the spread of mobile phones open new opportunities to perform mobile Customer-to-Customer commercial activities". Mobile shoppers cannot trust on steady connections; it allowed a great relevance on how to develop reliability on counterparts in a transaction and the tips to reduce the disconnection. The possible in wireless connections can encourage users to cheat. They suggest a feedback-based reputation mechanism able to detect malicious users. This new possibility of trading rose some concerns regarding the security of transactions that, in this scenario, becomes very critical Ref. (Gianluca Lax and Giuseppe M.L. Sarné, 2008)[252]. Maurizio Cavallari and Dr Francesco Tornieri (2017)[253] discussed the technological viewpoints that concern to the security aspect of smartphones in their research paper titled "Vulnerabilities of Smartphones Payment Apps: The Relevance in Developing Countries". They analyzed the most vulnerable areas in smartphone payment apps. Authors concluded that payment clearance companies were unable to protect the endpoints of online cash transactions. Payment clearance companies developed and deployed an architectural solution called Host Card Emulation (HCE). HCE architecture had the possibility of increasing the risk of illegal transactions. Authors argued that security and information extraction were intertwined and derive a significant role in monetary worth (Sanga et al. 2014)[254].

Security threat had a straight effect on the "social influence of information access and market behavior in developing countries" (Magesa 2014; Burrell 2010)[255,256].

Krucher and Corritore (2004)[257] established the point that both the online market and brick & mortar shared the same ethic. However, e-commerce had a different form of issues and scope (see also Mohammad 2015)[258]. The study of Stephen and Toubia (2010)[259] showed that online business created significant economic benefit by connecting the sellers and mobile shoppers and the value of a network was primarily dependent upon the accessibility (Maurizio Cavallari and Dr Francesco Tornieri, 2017)[253].

Ali Mirarab and AbdolReza Rasouli Kenari (2014)[260] studied the "challenges and vulnerabilities of mobile E-commerce and analyzed the provided solutions to facilitate selecting an appropriate solution for M-commerce security" in their research paper titled as "Study of secure m-commerce, challenges and solutions". Authors said that m-commerce was at its starting stage, and the commercial environment not yet developed. M-commerce was having security problems. It also became a barrier to

the fast growth of m-commerce. Ali Mirarab and AbdolReza Rasouli kenari (2014)[260] suggested the security control in m-commerce should be developed in all aspects including configuration, application domain, user domain, network domain, and network access. M-commerce security could be improved by detailed policies that include confidentiality, data integrity, and standard authentication. The lack of growth rate in mobile commerce was caused mainly by security concerns, and the ex was ting security problems should be solved. The security threats affect the user's identity, authentication key and account information. For example, there was a possibility of faking the user's identity and could do some illicit activities (Ali Mirarab and AbdolReza Rasouli Kenari, 2014)[260]

Ion Ivan, Daniel Milodin, and Alin Zamfiroiu (2013)[261] in their research paper titled "Security of M-Commerce transactions" analyzed the importance of security in m-commerce applications at the "administrative level and the user aspect". These researchers suggested it was essential to initiate and do the research endeavors to tackle the security and vulnerability problems in m-commerce. They indicate the implementation of the security parameters in online services, especially handling bank accounts, during cash transactions & entering personal profile details of the mobile shoppers. The data should be accessed only by the legal owners and respective stakeholders. Gheorghe (2001)[425] suggested that the exchange of data could improve the security of the m-commerce, knowledge about the exposure of vulnerability to the software programs and systems. A platform should be established to ensure the co-operation among different groups and developing infrastructures that can protect the capabilities. Kwok and Chi (2006)[263] discussed the obstacles faced in mobile commerce including the co-ordination and interoperability, user privacy and security of authentication process (Ion Ivan, Daniel Milodin, and Alin Zamfiroiu, 2013)[261]

Krishna Prakash and Balachandra (2015)[229] in their research paper titled "Security issues and challenges in mobile computing and m-commerce" discussed the challenges in a mobile network, “mobile services with high speed and security”.

Authors suggested “online transactions done on smartphone devices must guarantee high safety for credentials of the user, and there shouldn't be any possibility for abuse”. High-level security should be ensured for user credentials (Krishna Prakash and Balachandra, 2015)[229]

Amit Das and Habib Ullah Khan (2016)[262] analyzed "the information security parameters and behaviors of smartphone users in a wealthy economy of the Middle East" in their research paper titled "Security behaviors of smartphone users". The researchers were utilizing the information collected from 500 smartphones users. Authors said that adopting security protocols and changing the security behaviors mostly dependent on the smartphone's operating systems, the effective security responses and the expense involved in embracing them. mobile shoppers who install apps that were new and third-party applications without proper investigation was a significant reason for security users (Mylonas et al., 2013)[426]. Harris and Patten (2014)[264] agreed the assistance of BYOD in smartphones brought ubiquity capacity to organizations in doing computing but also create problems in the aspect of security in it, eventually, in a detailed analysis on information security. Silic and Back (2014)[265] agreed that

paying heed to the “mobile revolution” was essential to bridge the differences between the business aspects with academic info security. Smartphone security unfolded in two significant ways: technical and behavioral (Allam et al., 2014)[266]. When most the operating systems in the smartphones were exposed to security threats, the users of Android were at the most danger of security breaks in smartphones and it was also affirmed by the press reports (Forbes, 2014)[267] that Android had an open ecosystem in which third-party apps easily acquired comparatively limited scrutinized from Google, a platform on which it was sponsored. Android Google became much more aware and took an active role and approach to scan Android apps. Google was making efforts in protecting users from data leakage and malware. Hughes, J. (2011)[268] studied the android app markets and Android security was relatively less than 1% of the installation of "potentially harmful applications", however, the users that install apps from unauthorized sources were likely to have a high level of security threats. An Android app was requesting more consents from the operating System (Barrera et al., 2010)[270]. A rogue application could perform in harmony to reverse “permissions-based security” (Orthacker et al, 2012)[271] In general permissions were granted during installation of the apps and thereafter enforced whenever the apps were invoked. According to Mylonas et al. (2013)[426]

and other researchers' opinion, most smart users were aware of the security features of applications that were installed, but not paying attention to the warning messages. Such users miscalculate the permissions-based security and miss out the broad prospects of smartphone security. (Amit Das and Habib Ullah Khan, 2016)[262].

Fang - Yie Leu, Yi-Li Huang, and Sheng-Mao Wang (2015)[118] analyzed the security challenges in their research paper titled "A secure M-commerce system based on credit card transaction". Along with the increase in wireless internet shopping, credit card fraud also increased. Authors proposed enhanced security of online shopping with the system called "Secure M-commerce System (SMCS)" in which mobile shoppers can create a safe credit card transaction.

Mahmoudi, N., Duman, E., (2015)[272] reviewed credit card scam. The proposed system also employed a Data Connection Core (DCC)in which the link between card issuing bank and mobile shoppers was established before their wireless communication started to develop the security level of m-commerce environment. Lu, J., Yu, C.-S., Liu, C. & Yao, J.E. (2003)[172] studied “technology acceptance model” for “wireless internet". Compared to the earlier days, the convenience and security of wireless communication had been greatly improved. On the other hand, credit card fraud was also a serious issue. (Fang - Yie Leu, Yi-Li Huang, and Sheng-Mao Wang, 2015)[118] According to Barrera, D., Kayacik, H.G., Van Oorschot, P.C. and Somayaji, A. (2010)[270] in their research paper titled, "A methodology for empirical analysis of permission-based security models and its application to Android", an app might ask between 1 and 100 permissions from the operating system.

Serena Hillman and Carman Neustaedter (2017)[326] conducted a study on "mCommerce routines and behaviors along with issues of trust, given its long-term concern for eCommerce along with mobile payment services in North America" and given their implications in their research paper titled "Trust

and mobile commerce in North America". The researchers had collected the responses from 161 diary entries with the information of m-commerce activities. Few respondents felt that mobile commerce poses little risk. Hung, M.C., Hwang, H.G. and Hsieh, T.C. (2007)[274] had done an exploratory study on "the continuance of mobile commerce". They also had more trust in mobile apps that were developed by large companies. Trust had been a significant barrier historically in adopting m-commerce (Luo 2002)[275]. More than technologies, trust was playing a vital role in driving the development of mobile commerce in all of its format. The relationship between the computer and human-based is driven by integrity, benevolence, fairness, reliability, and predictability (Gefen, 2000; McKnight, Choudhary, & Kacmar, 2000)[276]. There was a common concern that mobile shoppers would expose their personal details and become vulnerable to cybercrime when to provide their personal information while doing the online shopping (Head & Hassanein, 2002)[277]. Thus, trust was the principal focal area in e-commerce research. The researchers had divided the trust into two aspects i.e. hard and soft. They had differentiated the two aspects mentioned above of trust in e-commerce. Strong trust was based on secure interactions and technical solutions with knowledge. Mansoor, Amir (2010)[278] studied E-commerce and its benefits. The transmitted data would be encrypted and protected by the firewalls.

On the other hand, soft trust was focusing on the vendors' quality of service and the privacy of personal information. As per Anckar & D'lincau (2002)[232], trust was built upon the experience that was affirmed by Luo (2002)[275] that trust builds upon the past reputation. Further, it leads to customer satisfaction. A lot of research had shown that the basic trust in eCommerce was developed by reliability, structural assurance, and site quality (Duzevic et al. 2016; Egger, 2001; Keen,1999; McKnight et al., 2002)[279,280,281,282].

According to Yung Shao Yeh Yung-Ming Li (2009)[283] in their research paper titled "Building trust in m-commerce: contributions from quality and satisfaction" emphasized "mobile commerce (m-commerce) as a new area of business opportunity".

Researcher concentrated in this paper on the determinants on which the customers' trust was built in m-commerce. Yang, S.T., Hung, M.C., and Hsieh, T.C. (2012)[284] examined the "determinants of mobile shopping continuance". This paper had applied "technology acceptance model (TAM), and service quality model (SERVQUAL)". Authors empirically tested the factors that form the trust of mobile shoppers with the available literature in m-commerce. The researcher conducted an online survey using the data from 212 m-commerce customers with the experience in mobile shopping. They had also analyzed the impact of satisfaction on factors on customers' trust in m-commerce. The results showed that however, the customization was, satisfaction and brand image had a direct effect on customers' trust while choosing the vendors in m-commerce. Brand image and customization had an equally strong and immediate impact on trust formation. Additionally, "responsiveness and interactivity had no direct impact, but had an indirect effect through satisfaction towards the vendors". Sharma, D. (2009)[285] studied "government policies & regulations and the impact on mobile commerce in Indian context". The quality of services also played a crucial role in gaining trust in m-commerce. There were many

studies associated to the service quality in mobile friendly webpages or interactive layout (Lee and Benbasat, 2003)[48], responsiveness (Corritore et al., 2003)[257], mobile technology, quality of the information (Chae et al., 2002)[38], and mobile merchants (Siau and Shen, 2003)[67]. It was agreed that the service quality influenced trust and satisfaction (Ribbink et al., 2004; Cyr et al., 2008;)[286,287],

Christophe Elie-Dit-Cosaque, Anthony Vance, and Detmar W. Straubwas (2008)[288] opined trust in their research paper named as "Examining trust in Information Technology Artifacts: The Effects of System Quality and Culture" to examine trust placed in the IT "artefact As the IT artefact of interest, they selected m-commerce portals that had an internet-enabled. This technology served as the right choice, considering the several problems linked with trust in the artefacts of Information Technology. Researcher elaborated the issues with confidence that was ahead of other matters in any mode of new shopping technologies. The points, as mentioned earlier, were equally valid in mobile-commerce platform. Client-server-based or web storefronts were intended to offer e-commerce facilities readily available in smartphone devices. They had designed a model that includes culture, visual appeal, and navigational structure that were very much relevant to m-commerce portals. They identified all of these constructs were important in building trust in IT artefacts. Mayer, R.C., Davis, J.H. and Schoorman, F.D. (1995)[289] proposed consolidative model of organizational confidence. Along with it, they also notified that the influences of the Information Technology artefact on users' opinions were substantial and subjective about trust. The design and characteristics of IT artefacts cannot be neglected in studies of trust, mainly if modern technologies were involved. The recent research had revealed gaining trust affects not only people but also includes the artefacts like hardware and software that enables the ease of tasks. Trust had become more recognized for its vital part in motivating customers to follow the mode of online commerce. Thatcher et al. referred to the habits of people related to the risk-taking level. The countries with the people who avoided vast levels of risk were least prepared to test and accept the unique technology.

Srite and Karahanna (2006)[290] recognized that mobile shoppers with sense of avoiding high uncertainty were influenced by the community that there were living in and standards to conclude whether to use a technology than the mobile shoppers with low uncertainty avoidance. (Anthony Vance, Christophe Elie-Dit-Cosaque, and Detmar W. Straubwas, 2008)[288]

C. Fung, B. Rashidi, A. Nguyen, T. Vu, and E. Bertino (2018)[291] investigated "Android users privacy preserving by crowdsourcing". A few mobile shoppers were reluctant to do online shopping because not having trust and confidence in shopping websites. Carlson, J. and O'Cass, A. (2011)[292] examined the evolution of commercially developed websites and performance elements on the user experiences. The trust in m-commerce can be defined as "the extent which an individual believes that using m-commerce was secure and had no privacy threats." According to the conclusions, mobile commerce firms must concentrate on developing the utility and trust of systems (i.e., privacy and security shield) and reduce the cost of mobile commerce in mobile shopper's adoption. Toh Tsu Wei, Govindan Marthandan, Alain Yee-Loong Chong, Keng-Boon Ooi and Seetharam Arumugam (2009)[293]

Muhammad Kashif Saif, Muhammad Suhail Sharif, Bingjia Shao, and Feng Xiao (2014)[294] analyzed the mobile shoppers ' trust in their paper titled "The Impact of Psychological Factors on Consumers Trust in Adoption of M-Commerce". Authors were studying the "psychological elements of consumer acceptance and adoption of mobile commerce ". They identified that "internal perception-based factors were the main contributors of mobile shoppers ' intention to adopt m-commerce".

Brian P. Cozzarin and Stanko Dimitrov (2016)[295] investigated "the role of perceived risk and access device type on consumers' online purchase decisions" in their research paper "Mobile commerce and device specific perceived risk". The authors said that the perceived risk had more immediate effect on mobile shoppers than PC users while making the purchase decision. mobile shoppers who were risk takers had more tolerance level and do the transactions more using the mobile device, and the m-tailers should pay attention to them.

Rousseau et al. (1998)[296] defined trust as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another". Trust improved mobile shoppers to defeat perceptions of risk and uncertainty. It helped in building the expectations of performance as per the desired benefits. Due to its uncertain environment, trust was more complex and crucial in M-commerce compared to a traditional market. Since transactions happen without face to face interaction, the consumer might suspect about their data, and cash could be transported to a 3rd party without their consent (Luarn and Lin, 2005)[269]. Beliefs of the customers about security and privacy would significantly influence the adoption and m-commerce usage.

Teo, T.S.H., Lim, V.K.G. and Lai, R.Y.C. (1999)[297] examined intrinsic and extrinsic motive in internet usage. Liu, C., Marchewka, J.T., Lu, J. and Yu, C.S. (2005)[298] studied trust and behavioral intention behind adopting electronic commerce. mobile shoppers' confidence in handling a smartphone had a significant influence on usefulness and enjoyment. mobile shoppers who had insufficient knowledge of handling mobile phones were anxious about moving forward with mobile commerce.

Furthermore, compatibility, enjoyment, and usefulness influenced customers' behavior. Mokhalles Mohammad Mehdi (2015) [299] stated that mobile shoppers with good income would go for better smartphones.

Swaminathan, T.M. and Ghosh, A.K. (2001)[300] had stated that security was one of the primary issue in adopting m-commerce. Prevenhueber, O., Orthacker, C., Teufl, P., Kraxberger, S., Lackner, G., Gissing, M., Marsalek, A., Leibetseder, J (2012)[271] studied the security permissions. AStudies by Hoffman, D., Novak, T. and Peralta, M. (1999)[301] showed most mobile shoppers were not willing to provide their personal details on a 3rd party website or on a mobile shopping application. Almost all mobile shoppers denied to give "personal information" to any website at one time or another. A considerable mobile shopper lacked trust in websites or mobile applications. Zahedi, F.M. and Song, J. (2008)[302] analyzed the influence of "trust revision: using health infomediaries". There was substantial usage in saving "sensitive data", such as financial, personal and medical data on a smartphone device considering the future use of mobile-commerce applications. Nevertheless, the mobility along with

vulnerability of the smart devices increased the danger of losing data or equipment itself. Moreover, risk of access by unauthorized users poses a threat to m-commerce adoption. P.P. Parameswari (2015) studied M-Commerce in Apps and its security issues. The consumer attributes such as inspiration, willingness, and capability along with marketers' attributes of integrity, munificence and ability, would play a vital role in purchasing mobile data and behavior of m-commerce usage. (Arif Sari and Pelin Bayram, 2015)[303]

Saleh, Zakaria I. and Mashhour, Ahmad (2014)[304] had researched with objectives of examining the degree to which various information security and trust factors affect mobile shoppers to embrace m-commerce and recognize critical influence in the intention to practice m-commerce.

hey had researched 268 individual smartphone users in the USA for their research paper titled as "Consumer Attitude towards M-Commerce: The perceived level of security and the role of trust had significant influence on trusting mobile commerce". The outcomes showed that the experience with previous mobile shopping experience was connected with the frequency of shopping and extended use of mobile commerce. The past shopping experience had a significant influence on building trust in m-commerce and continue to do shopping on smartphones. Corner, J. L., Thompson, F., Doolin, B., and Dillon, S. (2005)[319] along with Vijayasarathy, L. R., & Jones, J. M. (2000)[427] identified that the experience in shopping was notably connected with the attitude towards internet shopping and continuous intention to shop on it. Palmer and McCole (2002) carried out an experimental study analyzing the association between trust and "transaction frequency" in the buying behavior over internet. The study revealed that trust had influenced the frequency of shopping on smartphones (Saleh, Zakaria I. and Mashhour, Ahmad, 2014)[304]

Zixing Shen and Keng Siau (2003)[305] analyzed the trust in m-commerce in their research paper titled "Building customer trust in mobile commerce". They argued that the majority of the customers deny providing private data to web-based applications.

Mobile shoppers lack trust in the web-based applications as per the study by Hoffmann D., Novak, T., and Peralta M. (1999)[301]. Since mobile commerce did not provide an opportunity to observe seller's behavior in person, touch, inability to feel and inspect products, and mobile shoppers could perceive that online business was riskier in nature. The author also highlighted that the wireless network had a connectivity issue. Trust was not a onetime activity, and it was fragile. The process of continuous trust was essential. M-tailers can increase trust by creating quality websites and mobile apps. Sellers can follow key points to sustain the trust, expertise in the development of operating mobile commerce apps, maintain the sellers' integrity, posting privacy policies to the public, robust security controls, developing a virtual community, promote communication, enhance access and utilize external auditing to watch the operations. According to Holmes, J and Boon, S.(1991)[306] trust can be described as "a state involving confident and positive expectations about another's motives concerning oneself in situations entailing risk". (Keng Siau and Zixing Shen, 2003)[305]

Mahmoud Elkhodr, Seyed Shahrestani and Kaled Kourouche (2012)[307] proposed models that could enhance the security aspects of applications that were used for mobile banking. Perceived threat on reliability, and privacy were the primary causes that discourage mobile shoppers to adopt mobile shopping. L.L. Zhang, C.-J.M. Liang, Z.L. Li, Y. Liu, F. Zhao, and E. Chen (2018)[308] investigated the risks that were posed on privacy with the help of an analysis called sensitivity analysis. The companies that were having high trustworthiness in the normal websites had higher possibilities of converting the same trust to the mobile applications as well as mobile websites of the same companies (Yang, Chen, & Wei, 2015)[309].

Featherman, M.S., Miyazaki, A.D. and Sprott, D.E. (2010)[310] studied minimizing the privacy risk involved in e-service selections and expedite the perceived trustworthiness and improve the ease of use. Safety concerns had been considered frequently as one of the primary hindrances while switching to mobile commerce. Still, the study showed smartphone users were only worried about the safety risks tangled in the cash transactions and services that were based on locations. Ketkar, S.P., Shankar, R. and Banwet, D.K. (2012)[311] formed operational modelling and charting of influencers in mobile banking of India. Initially mobile shoppers were hesitant to carry out mobile commerce activities that involved banking or financial transactions due to possible unsafe exposure to the cyber world. Nabi, F., (2005)[312] investigated secured commercial mobile application ideas for the systems in e-commerce. Safety was an additional fear for mobile shoppers when they were availing location-based services. It involved transmitting location-based advertisements to the mobile shoppers' personal device. Therefore, the mobile shoppers were supposed to connect their mobile devices via Bluetooth or Wi-Fi. When mobile shoppers enable their Bluetooth or Wi-Fi facilities they were getting exposed to the third parties pushing information to their smartphones that posed a certain level of security concerns for example a data that was available on mobile device could become vulnerable to the eavesdropping. He, W. (2013)[313] surveyed "security risks of mobile social media through blog mining and extensive literature research". Though, smartphone users did not have any concerns while they were using their Smarpthones for the purpose of entertainment. Accordingly, mobile shoppers were possible to access entrainment contents such as downloading music or playing any mobile games without the worry of any potential security threats to their data. Kumar, A. , Lee, H.M.,(2006)[314] analyzed the Malaysia Broadband Access Services. The study on the Malaysian broadband services revealed that the mobile commerce transactions might get affected due to the security concerns. M-commerce marketers should develop privacy and security features. Udo, Godwin (2001)[424] inquired on the concerns about security and privacy as significant hurdles for online trading. The author had insisted on changing the perception of mobile shoppers related to the aspects of safety features in mobile transactions and location-based services. He also further suggested to have marketing campaigns to guide the mobile shoppers and build awareness about security in a better way. The awareness should include the features of web security, encryption and firewalls. This type of awareness session would increase the confidence of mobile shoppers in the security aspects of mobile shopping. Application providers might form a new strategy

to improve a perfect content delivery, and other entertainment activities by providing informal seminars, word of mouth and social networking channels (Felix T.S. Chan and Alain Yee-Loong Chong, 2013)[69] Authors Dr. Jay P. Trivedi and Dr. Sunil Kumar (2014)[315] investigated determinants of m-commerce in their research paper titled "Determinants of Mobile Commerce Acceptance amongst Gen Y". Authors stated that "perceived trust" and "self-efficacy" had a direct impact on behavioural intention to adopt m-commerce.

M-commerce posed a lot of challenges on the attributes of smartphones, quality of mobile applications, and the network connectivity. In this part of the chapter, the research scholar had made an effort to understand the challenges in mobile commerce by going through various research materials. John Matthew, Suprateek Sarker, and Upkar Varshney (2018)[316] reviewed the challenges and promises in mobile commerce services in "M-Commerce Services: Promises and Challenges". E-commerce referred to "emerging arena within which commercial transactions were made possible using handheld mobile devices that were connected by wireless networks". A prominent feature of M-commerce was that a person involved in M-commerce activities could handle business literally anywhere while roaming between places, or staying in various locations (Kristoffersen and Ljungberg, 2000)[317]. Mobile commerce enabled buyers to carry out the transactions at any time or whenever the need arose. M-commerce removed all space related constraints in a trade. The new advancements in the wireless technology helped a wide range of new services to the buyers. The new mobile technology had been embedded into people's lifestyle and the way they manage their shopping related activities. Applications with context-sensitive capabilities must be developed. S. Hong, C. Liu, B. Cheng, B. Ren, J. Chen (2017)[318] investigated "sensitive-based data and resource security framework" for mobile devices in China. (Kristoffersen and Ljungberg 2000)[317].

Ericsson Consumer lab, (2013)[320] stated the most disappointing problems that mobile shoppers experienced were the issue with internet connections, applications getting crashed and slow speed. Various technologies and techniques were connected while delivering contents to the portable devices like smartphones and PDAs (Fano and Gershman, 2002; John Matthew, Suprateek Sarker, and Upkar Varshney, 2018)[316]

Sandeep Gupta (2016)[9] reviewed the challenges in m-commerce in his research paper titled "M-Commerce: Challenges". The author claimed that mobile shoppers were reluctant to get familiar with mobile commerce due to the anxieties in payments in protected and secured environment along with other aspects of safety. Tarasewich, P. (2002)[2] investigated issues in mobile e-commerce. Sandeep Gupta (2016)[9] stated few significant types of category i.e. transactions that comprised purchasing, data entry, doing payment, and proper maintenance that would allow users to buy items quickly as per the content delivery. The requirements included tracking, consulting, notifying, confirming orders, and providing feedback etc. The author investigated the issues in m-commerce and states security concern was the biggest issue in m-commerce.

Habibullah Khan, Faisal TalibMohd, and Nishat Faisal (2015)[321] particularized the barriers to the spread of M-Commerce in their research paper titled as, "An analysis of the barriers to the proliferation of M-commerce in Qatar: A relationship modelling approach". The authors attributed M-commerce as “a group of web-based applications and services which help individuals to carry out any activity by smartphone”. The important objective of his paper was to improve a “hierarchical model” to the limitations influencing the development of M-commerce and recognize the variables which had decisive nature and could be a root cause for any issues. In this paper researcher, authors had developed variables that were considered as barricades in identifying, and utilizing the “interpretive structural model” method, by this, they had also made a relationship model. Moreover, "the impact matrix cross-reference multiplication applied to a classification approach was used to analyzed the effect and dependence among these factors". B. Liu, Y. Wu, N.Z. Gong, J. Wu, H. Xiong, M. Ester (2016)[322] had conducted "a structural analysis of user choices for mobile app recommendation". Global banking services were springing every day with the implementation of fresh and innovative technologies in mobile banking services. Among the interference of M-commerce in banking services, global financial services were listed at highest in banking applications, micro insurance, banking without branches, and digitized wallet. Not only that banking organizations were under enormous tension to improve their financial performances and retain the customers with satisfaction. They analyzed the “digital rights management” for m- commerce applying web-based services. The authors endeavored to bring up with modelling ideas of the predicted barriers in m-commerce, that would help the mobile service providers to know and remove the barriers for more reliable outcomes such as loyalty toward organization, recurring customers, and attain attraction towards m-commerce etc.

A consumer was concerned about the internet connectivity that might have the issue of reliability, cost, security, and downloading time (Gillick, 2002)[323].

Cristian Toma (2012)[324] discussed the m- payment issues and concepts in their research paper titled "M - payment issues and concepts". He suggested m-payment should be of simplicity &usability, universality, interoperability, Security, Privacy & Trust, cost-effective, speed, and cross border payments. Still, many factors might decrease the potential advantages of m-commerce by frustrating users: "data transfer difficulties, poor connectivity, awkward device design features such as small screens, low-resolution displays, and tiny multifunction keypads". (Hsiang-Ming Lee and Tsai Chen, 2014) Lack of adoption was caused by cultural and social principles (Ling, Yttri, Anderson & Diduca 2003, pp 1-9)[325] M-commerce did not grow as it was. There were few reasons cited for it. Lack of adoption (W), cultural and social ideologies and mobile-technology limitations.

Some users postpone purchasing smartphones considering the pressure on real-time interaction with others despite the location where they were (Serena Hillman and Carman Neustaedter, 2017)[326.] Zixing Shen and Keng Siau (2003)[305] highlighted the challenges in wireless networks including limited bandwidth, unstable connection, and the predictability of the functions. They had listed down few more challenges of costly operations, lack of protocol in standardization, and the wireless transmission of

data. The authors had developed a model to initiate and sustain customer trust in mobile commerce. Archana M. Naware (2016)[101] said, "despite having many advantages, mobile commerce had some limitations such as a tiny screen of the device, weak processors, limited memory, poor resolutions, poor data entry, and lack of WAP-enabled devices, expensive data speed, and a shortage of bandwidth". Khawar Hameed, Hanifa Shah, Kamran Ahsan and Weijun Yang (2010)[327] said The "processing power" of the smartphone device was lower as compared to a personal computer, the small screen size of the smartphones, "non-uniformity of networks" interruptions in the availability of network were some of the disadvantages of m-commerce. M-commerce had its own difficulties while evolving. Even though, it was roughly based on e-commerce platform, it had its own unique characteristics that had become challenges to the growth of m-commerce development. There are numerous researchers had been done by the scholars to understand the challenges in m-commerce and tried to provide solutions to those challenges.

Phillip E. Copeland (2016)[14] analyzed the "possibilities of adopting mobile commerce in small business" in their research paper titled "An investigation about the small business adoption of mobile commerce". He had listed few challenges like feeble mobile internet connection, limited input buttons in smartphones, comparatively smaller screens of smartphones, poor battery back-up, and insufficient memory space. The author had stated the listed challenges were creating frustration in mobile shoppers' mind. The same reasons had been cited by the authors Li, Dong & Chen (2012)[328]. Zhou, T. (2014)[190] examined "continuance usage of mobile internet services from the perspective of resistance to change". The growing need for smartphone applications had been determined by improved accessibility and choices. It had led to the development of commercial applications that were operatable on the smartphone environment, and the advancement of "cloud apps". Additional challenges included customized access to the users and the usability of the mobile applications.

The other problems included mobile functionality, users' inter-related activities on the smartphone devices, limitations in bandwidth and unstable connectivity in the mobile network. Cis Hawley, K. Try (2011)[329] discussed the quality of apps that were to be considered before buying in the Android market. Mobile shoppers used to get frustrated due to the uncertainty with the mobile internet connectivity, buttons that were inadequate to input information into the smartphones, tiny screens, poor battery life and low memory space.

2.11: REVIEW OF LITERATURE ON BEHAVIOUR OF MOBILE SHOPPERS:

Mobile shoppers were key players in growth of m-commerce. Unlike other traditional shoppers, mobile shoppers differed with their attributes considering their willingness to adopt to the growing technology of m-commerce. This part of the chapter had reviewed the literatures on the mobiles hoppers behavior in the mobile shopping environment. There were numerous study materials available in to study and analyze the behavior of a mobile shopper. Chen-Ying Lee, Chih-Hsuan Tsao, and Wan-Chuan Chang (2015)[142] studied the correlation of mindset towards adopting mobile commerce and satisfaction of mobile shoppers in mobile application services. Tsang et al. (2004)[330] reviewed shoppers' opinions

regarding mobile advertising and the correlation between behavior and attitude. DeNinno, N. (2014)[331] studied the purchasing behavior of men and said that “men shop online as much as women do but shop on mobile devices, tablets and more”. The conclusion of their survey specified that customers usually had negative attitudes about advertisements on a mobile device except they had particularly permitted to accept advertisements (Suleman Barutcu, 2007)[332].

Mutaz M. Al-Debei, Mamoun N. Akroush, and Mohamed Ibrahiem Ashouri (2015)[333] had examined the shopper views toward “online shopping” in Jordan in their research paper titled "Consumer attitudes towards online shopping perceived web quality". They surveyed 273 online shoppers. Authors said, "consumer attitudes toward online shopping was determined by trust and perceived benefits, and higher levels of perceived web quality lead to higher levels of trust in an online shopping web site". (Mutaz M. Al-Debei, Mamoun N. Akroush, and Mohamed Ibrahiem Ashouri, 2015)[333]. Hsiang-Ming Lee and Tsai Chen (2014) discussed "the perceived quality as a key antecedent in continuance intention on mobile commerce". The study drew consideration to the significance of worth in maintaining mobile commerce customers. They argued "perceived quality was necessary for m-commerce success and decisive factor of continuance usage". Authors proposed a "four-dimensional mobile service quality description consisting of connection, content, interaction, and context quality".

Schierz, P.G., Schilke, O. and Wirtz, B.W. (2010)[334] analyzed the customer reception of payment services in mobile phone and analyzed “perceived quality as a principal antecedent in continuance intention on mobile”. Gu, J.-C., Lee, S.-C & Suh, Y-H (2009)[335] studied the “determinants of behavioural intention to mobile banking”. Authors had analyzed the trends in communication technology in the past decade and the major changes in it. From mobile phone to sleeky smartphones, big desktop to laptop and tablet, the idea of ubiquitous consumption had developed from its origin.

Aksoy et al. (2013)[234] had an opportunity to “study the connection between satisfaction and loyalty in the mobile telecommunication context among different eight countries” and studied brand loyalty in family restaurant and its influence on the satisfaction of mobile shoppers and emotion. Authors studied the increase of faith in m-commerce with satisfaction and quality. There were a lot of recent studies that show the effect of brand identity, and customer wellbeing on faith (Hwang & Hyun, 2012; Marin et al., 2009)[336,337]. Mobile shoppers were tending to buy smartphones with the right brand name to have experiential benefits than the functional benefits (Ismail, Melewar, Lim, & Woodside, 2011)[338]. As per Brakus, Schmitt, and Zarantonello (2009)[127], brand familiarity had the definition of "subjective, internal consumer responses (sensations, feelings, and cognitions) and behavioral responses evoked by brand-related stimuli that were part of a brand's design and identity, packaging, communications, and environments". Any brand-related motives created a brand experience in the thought of mobile shoppers; that's how the perception of mobile shoppers ' brand preferences were developed (Keller, 1998)[339]. With the recent developments, mobile shoppers not only bought smartphones for the functional values of goods or a service. The perception of the wellbeing of mobile shoppers was related to the positive contribution of the brand to the quality of the life of mobile shoppers. (Grzeskowiak and

Sirgy, 2007)[340]. In practical, mobile shoppers ' wellbeing perception indicates when mobile shoppers consume a brand's product, it induced the perception of the quality of mobile shoppers ' lifestyle. Nam, Ekinci & Whyatt' (2011)[341] said that fulfilment with the consumption of the product created optimistic vibes towards the brand . Merennie Tan Yee Thour, Barathy Doraisamy and Santhi Appanan (2014)[342] in their research paper titled "An investigation of the factors affecting consumer decision making of Smartphone in Kedah, Malaysia" investigated the factors affecting the consumer decision making of Smartphone. As part of the study, authors had analyzed brand, price, feature, application and quality of the smartphones. Total of 250 survey questionnaires was distributed in Sungai Petani, Kedah using convenience sampling. The study revealed that the features including size, shape, colour, LCD screen and camera pixel, play a vital role in mobile shoppers ' buying decision. Kotler. With the modern technology, mobile shoppers had realized that various feature would bring several levels of satisfaction towards Smartphone. In the present era, the smartphones had the characteristics of wireless connectivity, mobile web browser, installation of applications, ability to build programs, managing files, capturing and presenting multimedia, high-resolution screen, many gigabytes of storage, movement and location sensors were the most selling points of a smartphone. According to the authors weight, colour display, screen resolution, standby time, available memory, talk time, availability of expansion slot, Read-Only Memory (ROM), resolution of a digital camera, infrared, Java applications, Bluetooth, GPRS, WiFi, WAP, MP3, and types of messaging were the main features in the smartphones. They studied "adoption of WAP-enabled mobile phones among internet users". Throughout the analysis, the study revealed factor that price was the main factor that influences decision making and followed by quality, application, feature and brand. (Merennie Tan Yee Thour, Barathy Doraisamy and Santhi Appanan, 2014)[342]

Ki Joon Kim, Dong-Hee Shin and Eunil Park (2015)[343] had done a study and proposed "an acceptance model for curved-screen smartphones". They explored the influence of the feeling of coolness was getting provoked by utility, sub-cultural attractiveness, originality, and attractiveness of the curved-screen develops smartphone adoption in their research paper titled "Can Coolness Predict Technology Adoption? Effects of Perceived Coolness on User Acceptance of Smartphones with Curved Screens". The researchers had proposed subcultural appeal, originality and attractiveness create positive effects on the user attitudes and leading ultimately to the greater acceptance of the smartphones. Tractinsky et a (2000) advised the aesthetic value of any technology were very much subjective, affect-based qualities and non-quantifiable. Aesthetic values were as vital as usability related factors considering the efficiency of the technology. A product that was different and unique would generate attractiveness among the mobile shoppers that look for originality in the product and a greater acceptance of innovativeness to those who identify themselves as early adopters and power users (Ki Joon Kim, Dong-Hee Shin and Eunil Park, 2015)[343]. Authors also claimed that external perceptions like “social influence”, “perceived cost”, and “perceived risk” did not have effect in strengthening the trust.

Mudambi, S.M., and Schuff, D (2010)[344] studied the buyers' reviews of m-commerce. “Perceived risk” could be defined as "customers' belief about the possible negative outcomes from the online transactions". They said that "perceived risk can be identified as the possibility of future harm but not certain, or the probability of any such harm, or the expected disutility of such harm". "Trust was defined as "the willingness, in expectation of beneficial outcome" while "risk was defined potential of loss (an undesirable outcome) resulting from a given action or activity" (Muhammad Suhail Sharif, Bingjia Shao, Feng Xiao & Muhammad Kashif Saif, 2014)[294]. According to Brian P. Cozzarin and Stanko Dimitrov (2016)[250] men and women shop equally. However, the device that was considered for shopping, men tend to shop more using mobile devices than their women counterparts. A similar result was identified that confirms the increased perceived risk would impact negatively the mobile shoppers ' intentions to buy. Kesharwani, A., & Bisht, S.S. (2012)[345] studied “the influence of trust and “perceived risk” on online banking choice in India”. Ono et al. (2012)[346]. cited the differences in the motivations of the individuals while browsing physical and online stores. Ono, A., Nakamura, A., Okuno, A., & Sumikawa, M. (2012) [346] studied “consumer motivations in browsing online stores with mobile devices”. Likewise, Wang, Lu, Su and Wu conducted a comparable study to decide the determinants that would drive mobile shoppers’ desire to shop on smartphones and any handheld gadget. Chin et al. argued that mobile shoppers had less possibility of finishing up buying things online with the help of a mobile device compared to a wired computer.

Strahilevitz and Garbarino (2004)[347] analyzed gender diversity in online shopping with the help of a self-reported survey.

Brian P. Cozzarin and Stanko Dimitrov (2016) [250] analysed a sample of 260 respondents, and the authors identified female were not willing to take a risk when compared to the men who were eager to take a chance and make a purchase online (Brian P. Cozzarin and Stanko Dimitrov, 2016) [250].

According to Davis (1989)[109], anyone could consider that an application was useful, however he/she might also find that the system was hard to handle. PEOU was measured as an essential factor to adopt “information technologies” including online banking (Ndubisi and Guriting, 2006; Begum and Jahangir, 2008)[348,349] intranet, 3G, “wireless internet”, “internet commerce” and lately mobile commerce. Several studies had shown “perceived ease of use” was considered to be an inspiration in adopting mobile commerce (Wei et al., 2009; Khalifa and Shen, 2008b, Kim and Garrison, 2009)[177].

Mokhalles Mohammad Mehdi (2015)[299] analysed the buying behavior of mobile shoppers in their smartphone titled "Buying behavioral pattern regarding smartphones users". The author said consumer buying behavior was mainly influenced by factors such as social factors, durability, name, quality, price, and features. The author identified that determinant such as usability, features, aesthetics, and cost influence smartphone brand choice. Reputed brand, usability, pleasure ability, advanced value-added features and smart appearance were playing a vital role in mobile shopper’s mobile phone buying decisions. The author provided a few recommendations such as smartphone vendors should focus on buying criteria of youth groups because two-third of the users of smartphone

belongs to user groups of 15 – 25 years. Smartphone vendors should incorporate the social networking features in all the devices considering consumer buying criteria, and all income groups of mobile shoppers.

Woo Jin Choi (2012)[350] analyzed mobile shoppers buying behavior regarding smartphones. According to Woo Jin Choi (2012)[350] in his research paper titled "Essays on consumers' goal orientation and price sensitivity", mobile shoppers that were promotion oriented would be more likely to pick the more costly smartphone compared to those who were prevention-oriented. They recommended quality was predominantly a promotion characteristic, whereas price was predominantly a prevention feature. (Woo Jin Choi, 2012) [350]

Few researchers were trying to comprehend customers repurchase desires in online shopping. A research had been conducted using the technology acceptance model (TAM) on the dimensions of e-commerce, such as enjoyment and trust related to the repurchase intentions of mobile shoppers. The sample size of 360 respondents had been taken. The mobile shoppers that were having personal computers in their homes participated in the research model proposed. The researchers had analyzed the data collected with the help of PLS.

The determinants of trust for online shopping were security, privacy, performance, "order fulfilment" and navigation (Bart et al., 2005)[351]. Mobile shoppers used to build up trust on the sellers based on the firm size, offline presence, and reputation.

Research had revealed that the kind of product (Chiang and Dholakia, 2003)[352], and "purchase involvement" (Pavlou et al., 2007) could impact the behavior in shopping online.

Future research could be combined such variables of building trust, perceived value, intention to repurchase and hedonic beliefs. Sanz S and Ruiz, C (2006)[353] had done an exploratory study in purchasing intention of mobile shoppers and internet dependency of Spanish internet users. Marketing scholars had discussed using of the smartphone gives not only utilitarian benefits but the feel of a hedonistic worth (Childers et al., 2001)[354]. Improving the quality of service to the mobile shoppers and providing them ways to reach out to the vendors would increase the trust in them.

Mobile shoppers would not be willing to do online shopping if they do not have conviction about the security of the data about their personal information including their credit card details were covered from the possible fraudulent activities (Collier and Bienstock, 2006)[355]. With the quality one can know the trustworthiness of the site of the e-services provided by the vendors. The online merchants should make efforts to help the customers to intensify their opinions on trust. The online sellers can gain the trust of customers by placing the privacy policies visible on the shopping websites (Armstrong and Culnan 1999)[356]. A modern research by Flavian and Guinaliu (2006)[357] had also emphasized the critical aspect of trust in knowing the reliability of web sites. Several researchers had stated that trust was an essential factor in online shopping. In contrast, inadequate information and fear were a threat to online shopping. A swift reply to questions was likely to reduce doubt. It was also an imperative way for mobile sellers to prove that they were consumer-oriented and be benignly towards customers'

satisfaction (Gummerus et al., 2004)[358]. Holbrook and Hirschman (1982)[359] recommended that "confident consumption related to emotions in a hedonic context is likely to increase high levels of commitment and the intention of repurchasing". Privacy related concerns could be arrested by securing and shielding the information of the mobile shoppers. They analyzed the prime purpose why several people were not moving to mobile shopping. He had identified that the hesitant in sharing personal information and lack of trust were the primary reasons for mobile shoppers adopting the m-shopping. mobile shoppers also worry that their personal data could be sold to the 3rd person without their consent or awareness. Jarvenpaa et al. (2000)[360], for instance, specified that variances with reputations and size among internet stores had effect on mobile shoppers ' trust in the stores. Z. Yan, P. Zhang, R.H. Deng (2012)[187] analyzed the "trust-behavior-based reputation" and recommendation for smartphone applications. McKnight et al. (2002)[282] specified that the perceived quality of a web site would influence mobile shoppers' trust in the e - vendor (electronic vendor).

As per Moorman et al. (1993)[361], timely resolutions and communication improved trust. The results suggested that the shopping behavior of the mobile shoppers and the communication with the vendors would help to understand the nature and attribute of the shopping. Researchers should give thoughtful attention to

developers of m-shopping web sites. This experimental study was conducted with 369 professional participants. "Structural equation modelling (SEM)" was used to analyze the connection. The outcome showed anxiety, which was a significant obstacle against using new ideas. Anxiety was a critical undesirable forecaster of a consumer's desire to adopt smartphones.

Hence, easy access had a constructive effect on mobile shopper experience in mobile shopping. "Ease of use" had been identified as a significant part in the aim to adopt m-commerce (Pijpers and van Montfort, 2005)[364]. Many mobile shopping researches had been done on the way to understand the "ease of use" but did not focus on "ease of access". Several researches had been conducted to understand the perception of mobile shoppers "ease of use" that influence considerably user's inherent desire (playfulness or enjoyment) (Moon and Kim, 2001)[365]. Study of Liu, C., Marchewka, J.T., Lu, J. and Yu, C.S. (2005)[298] revealed that gratification strongly modified the purpose to involve in mobile shopping. D. Saccà, N. Cassavia, E. Masciari, and C. Pulice (2017)[366] analyzed user behavioral aspects to improved information exploration on big data. The research concluded was impressive that in mobile shoppers ' interaction with the MSS, individuals associated in the activity for "intrinsic intention" compared to "extrinsic motivation" in adopting m-shopping.

Hsin-Hui Lin (2012)[367] in his research paper titled "The effect of multi-channel service quality on mobile customer loyalty in an online-and-mobile retail context" elaborated "the effects of multi-channel service quality on mobile customer loyalty in the context of online-and-mobile retailing". Researches had provided a research method which was founded on earlier literature on the quality of the service offered. Data were gathered from 102 participants in Taiwan were examined against the research model using the "Partial Least Squweres" (PLS) method. The outcomes indicated that empathy, tangibility,

and receptiveness in electronic service (e-service), and mobile service influence customers' loyalty, both indirectly and directly to their m-service providers. Results of the research provided many necessary practical and theoretical inferences for multi-channel retailing management. Wong, L. S. and Lee, W. O. (2016)[368] studied factors of mobile shoppers' loyalty in Malaysia.

The researcher offered and verified a structure to study the outcomes of "multi-channel service quality" on mobile service and mobile shoppers' faith in connection with "online-and-mobile retailing". Sanchez-Franco MJ. WebCT (2010)[369] studied the moderating consequence of perceived quality on an "extending technology acceptance model". The study had contributed to multi-channel retailing research. It had examined that "online-and-mobile retail context". " mobile shoppers who perceive a service quality dimension from a retailer's e-service channel as high were more likely to believe that the retailer's m-service channel can also provide high service quality for that dimension than those who perceive the same stimulus as low".

Lu June (2012)[370] in his research paper titled "Were personal innovativeness and social influence critical to continue with mobile commerce?" investigated "the impact of social influence and personal innovativeness in information technology (PIIT) on user continuance intention toward mobile commerce (m-commerce) in the USA". Lu June (2012)[370] surveyed students of both segments of graduate and undergraduate smartphone users in an university. "Structural Equation Modelling" measures were utilized to analyze 323 valid data facts. PIIT also remained as the predecessor of "perceived ease of use". The influence of society had changed the design of impact on continuation intention to use.

They advised that marketers in M-commerce should give care to innovative ideas because it transformed smartphone user's capability and willingness to embrace to adjust to novel feature and services.

A limited researchers given considerable heed to the habits of smartphone users, familiarity, and perceived value (Kwahk and Ng, 2010)[371], and confidence about the services offered in smartphones (Akter et al., 2011)[372]. Maximum researchers inclined not to include the stimuli of internal inspiration like personal innovativeness and outside stimuli of "social influence" toward the adoption of m-commerce services. Usually, these reasons were thought to be necessary during the initial stage of adoption. The impacts diminished over a time post adopting m-commerce (Lewis et al., 2003)[196]. Most m-commerce researches identified personal innovativeness as a primary factor to adopt m-commerce. Still, there had been a minimal initiatives put in examining the influence of "personal innovativeness" in the context of "post-adoption" (Lu June 2012)[370]

Arif Sari and Pelin Bayram (2015)[303] analyzed the "challenges of internal and external variables of consumer behavior towards Mobile Commerce" in their research paper titled as "Challenges of Internal and External Variables of Consumer Behavior towards Mobile Commerce". They said companies were utilizing the technology to pull the customers and grab their attention. The authors said mobile commerce was versatile and flexible, which made successful method for few businesses and firms that

do conduct business activities electronically. Authors discussed the obstacles in adopting new technology. Difficulties in handling new technologies would lead to frustration among mobile shoppers. The technological variables, psychographic, internal-demographic, external-social and cultural aspects would influence mobile shoppers behavior in mobile commerce.

Melody M. Tsang, Shu-Chun Ho, and Ting-Peng Liang (2015)[373] conducted research investigating "consumer attitudes toward mobile advertising and the relationship between attitude and behaviour". Their research paper was titled "Consumer Attitudes toward Mobile Advertising: An Empirical Study". According to Zanot, E.J (1984)[374] public attitudes toward advertising had been a center of study for in present and past. Tsang, M., Ho, S. and Liang, T. (2004)[330] analyzed customer views towards the advertising in the mobile device. Even though early researchers had some positive outcome about advertisements in their studies, later it revealed mobile shoppers had a negative impression on mobile advertising. Similarly, as per the study of Kanfer, A., Schlosser, A.E.; and Shavitt, S.(1999)[375] mobile shoppers had a negative opinion about mobile advertising unless they had consented for the display of mobile advertisements. Their study also further exposed that there was a close connection between mobile shopper behavior and their attitude (Melody M. Tsang, Shu-Chun Ho, and Ting-Peng Liang, 2015)[373].

Guillermo Goicochea, Lara Khansa, and Christopher W. Zobel (2012)[376] said "it was important to consider the relevance of mobile shoppers to the development of new service offerings" in their research paper titled as "Creating a Taxonomy for Mobile Commerce Innovations Using Social Network and Cluster Analyses". They carried a "textual analysis of all filed m-commerce patent applications over 2,300 to dissect innovations in m-commerce".

Authors said it was essential to empower the mobile shoppers and should consider the opinions of mobile shoppers while developing innovative ideas. Liang, T.-P., Wei, C.-P.(2004)[377] & Yeh, J.-H; Hu, W.-C. and Yang, C.-H.T.(2008)[378] said mobile commerce was the next wave of e-commerce. Since mobile devices such as personal digital assistants (PDAs), cell phones, laptops, Tabs and iPads provide the experience of real-time communication irrespective of locations at any time. The attribute of anytime accessibility to the internet facility opened up a way for financial transactions that enhanced the mobile shopping (e.g., coupons, “e-banking”, payments, buying, and selling), “location-based” services (e.g., traffic advisories, map services), entertainment (example ticketing and gaming), tracking, inventory management, health care and education. Dillon, M., Johnson, M.; and Skiba, B (2000)[379] captured these multifaceted characteristics of m-commerce by describing it as the "use of mobile devices to communicate, inform, transact" and entertain "using text and data via connection to public or private networks" (Lara Khansa, Christopher W. Zobel, and Guillermo Goicochea, 2012)[376].

Pin Luarn, Yi-Shun Wang, and Hsin-Hui Lin (2006)[40] analyzed the "consumers' intention to use mobile service" in their research paper titled as "Predicting consumer intention to use mobile service". Authors argued mobile shoppers might not adopt all the services offered by m-services providers. They studied the determinants that affect mobile shoppers ' desire to use the services offered over smartphones.

Authors stated that the mobile shoppers ' prime reasons for the intention to adopt m-service were not clear.

However, mobile shoppers ' desire to adopt m-service might progress by adding perceived self-efficacy and credibility. M-service offers values that were not accessible to the age-old electronic commerce, such as dissemination, flexibility, ubiquity, and personalization. The customers had various reasons to accept m-commerce and not belonging to any single reason (cf. Urbaczewski et al., 2002; Pedersen & Ling, 2003; Meso et al., 2005) [380,381,382].

Ulas Akkucuk and Javad Esmaeili (2016)[383] analyzed the factors that would affect the mobile shoppers ' buying decision while purchasing smartphones in their research paper titled "The impact on brands on buying behavior: An empirical study on smartphone buyers". Researchers had collected the samples from 171 smartphone mobile shoppers. Their findings indicated that a greater number of smartphone shoppers' decisions were mainly motivated by brand awareness and loyalty (Ulas Akkucuk and Javad Esmaeili, 2016)[383].

Eun Kyung Lee, Eunju Ko, and Eun Young Kim (2009)[55] explored the details about "potential of a consumer technology adoption model" in their research paper "Modelling Consumer Adoption of Mobile Shopping for Fashion Products in Korea". In this paper, they had examined "structural relationships among mobile commerce characteristics, perceived value, and intention to adopt mobile shopping for fashion products". They analyzed the shopping context in Korean mobile users; the attributes of m-commerce consisted of four major elements: ease of use, instant connectivity, enjoyment, and usefulness.

It shows that the customers recognized m-shopping services as heterogeneous in combination with affective benefits and utilitarian, irrespective of attaining a complete opinion of m-shopping capacities—as it was visible in the merger of value with personalization.

Min Li Z.Y. and Dong Xi Chen (2011)[384] interpreted mobile shoppers' emotion in their consumption experience in the context of mobile commerce from an experiential view" in their research paper titled as "Factors influencing consumption experience of mobile commerce: A study from experiential view" Researcher tried to focus on "the experiential aspects of mobile commerce regardless of the consumption type". To carry out the study researcher had proposed a "stimulus-organism-response (S-O-R) based model that incorporates both utilitarian and hedonic factors of consumers". The researchers gathered the information from 293 smartphone shoppers. The sampling was taken in a library, classroom studies, and through e-mails. Louzi, B., and Iss, B. (2012)[385] investigated the factors affecting the customers' desire to accept the m-commerce services in Jordan. The structural and measurement model were analyzed using LISREL. The outcomes of this research indicated that "emotion played an important role in the mobile consumption experience; hedonic factors had a positive influence on the consumption experience, while utilitarian factors hurt the consumption experience of customers". Besides, system and content quality were also proved to have a fundamental relationship to embrace the m-commerce (Cheong and Park, 2005)[386].

People favour websites they can navigate swiftly with their mobile tablets or smartphones (Zamfiroiu, 2014)[387]. Mobile shopping had grown up to be another avenue of smartphone users (Chang, Williams, & Hurlburt, 2014)[388]. Mobile shoppers shopping behavior actually begins as they had a successful first transaction in mobile shopping endeavor (Wang et al., 2015)[389]. The buyers' pervasive decision-making intentions affected the development of business. It became important for e-tailers to understand buyers' enthusiasm better to involve in "mobile word-of-mouth" interactions (Xiao-Liang et al., 2013)[390]. The icons and shapes, colors, and general impression of the channels in smartphone would generate inducements for mobile shoppers to think and sense confident about the sellers (Magrath & McCormick, 2013)[391]. Young users favored using mobile applications for content presentation and entertaining ideas. It was backed up by a comparable investigation done by Teo (2001)[392] on the practice of internet. Younger smartphone users were using their wireless mobile devices to involve in the activities of sending messages, watching audio or video contents, and downloading music frequently.

Teo (2001)[392] said that age did not have any notable connection with the activities of online transactions or any other location-based transactions. There was no correlation between online purchasing and age. Teo (2001)[392] attributed any deficiency displayed by the smartphone users, it was not due to the age but by their own deficiency of any such activities Hence, any business activities like location-based services and transaction were less generally utilized than content delivery and entertainment. Education of smartphone users was identified to have a considerable relationship with location-based services offered and any transactions. Rhee and Kim (2004)[393] and Chinn and Fairlie (2006)[394] identified that people with good educational background were more likely to make use of the internet technology.

This suggestion could only partly back up because the educational background was not having significant association with any other activities attributed to m-commerce. Smartphone users who had obtained higher education might had more spending capacity and could purchase items on smartphones or any other mobile devices. Mobile shoppers with good educational background might be able to understand the contents that were available on the mobiles shopping applications and could make transactions that were location based as well. The services offered through mobile shopping applications might be more complicated than the services offered in the mobile websites. Few instances that could be mentioned here such as the set up of security codes while involving mobile banking activities on the mobile applications along with the challenges of setting up the wi-fi connections or activating any Bluetooth facilities to make available of the location based offering like advertisements that were specific to a particular location. A study was investigated to find out the motivations of mobile shoppers in relations with their demographic profiles esp. on the aspects of security related concerns. The findings had thrown many implications to the audience. This study did not focus on the technology adoption rather the similarities of adoption factors in m-commerce.

The designers of mobile commerce applications were developing mobile applications based on the activities carried out previously. For instance, prior studies had observed that the younger generations were more inclined to use smartphones for any shopping needs. Nevertheless, by concentrating on the

activities in mobile commerce, the researchers could show that the influence of age affects the activities involved in entertainment and content delivery. Irrespective of age group, all the mobile shoppers were utilizing the facilities in the mobile shopping applications. The outcomes consisted of direct correlations with m-commerce activities and demographic variables, moderately having one aspect as a controlling variable. Analyzing the correlation gave exposure to the marketers in m-commerce to categorize the market properly by implementing relevant marketing ideas or come up new ideas while developing m-commerce applications as per the educational profiles and age of the users. Marketers could develop services to smartphone users with higher educational background. Marketers could instruct users on the useful features available in m-commerce and help mobile shoppers to know the easiness and usefulness of the applications. The study result was useful to the Malaysian government as it was playing an important role in national Multimedia Super Corridor plans. Kumar, A., Lee, H.M.,(2006)[314] analyzed the Malaysia Broadband Access Services. Malaysian government made initiatives to invest more on building infrastructures on telecommunications that could increase the accessibilities of m-commerce to its senior citizens and make them involved more in the mobile commerce activities, the Malaysian government conducted sessions.

Chong, A.Y.-L,Ooi, K.-B., Lin,B., & Tan, B.-I (2010)[395] analyzed the choices of online banking. Conflicting to the earlier findings that gender did not have any significant influence with the type of activities mobile shoppers employed in. While studies that were carried out on the internet usage earlier (Teo, 2001) had discovered discrepancies in internet usage behaviors based on the gender of the users. The research had displayed that was not the same case when it came to mobile commerce.

Lie 'bana-Cabanillas, F.J., S anchez-Fern andez, J. and Mun ˜oz-Leiva, F. (2014)[396] examined the gender roles in accepting mobile payments. It showed that there were no constraints based on gender in using mobile technologies because it had evolved to a higher stage at present that eliminated the gender differences mostly in m-commerce. The outcomes reported that aside from entertainment activities of games downloading or listening to music, the smartphone users also enjoyed the mobile shopping activities, transferring funds, buying and getting advertisements that were specific to their locations in which they were living. Content deliveries that were related to the entertainment activities seemed to had a significant relationship with the social influence. Some smartphone activities could be carried out only when there were some communities involved such as sending messages to each other or playing mobile games. Hua Ye (2010)[397] considered implementation and design of m-commerce system with the application of 3G network platforms. Peers influenced each other to fasten the activities in mobile commerce.

Nevertheless, for example, actions like transactions, could be simply useful. Hence, social influence did not correlate with any cash transactions that were based on locations. Felix T.S. Chan Alain Yee-Loong Chong (2013)[69] focused on M-commerce usage activities in their paper titled "Analysis of the determinants of consumers' m-commerce usage activities". The important objective of their study was to analyze the factors that function as elements of consumers' Mobile commerce (m-commerce)

practice. The studies indicated that customers are having continuous intention to use a technology that are having “perceived value”, “trust”, “habit”, and “customer satisfaction” (Lin, H. H., & Wang, Y. S. 2006)[205]. Few other studies stated that the intention to use and adopt any technology is based on “cost”, “UTAUT”, “effort expectancy” and “performance expectancy” (Alkhunaizan, A., & Love, S, 2012)[398].

2.12: REVIEW OF LITERATURE ON SCOPE OF M-COMMERCE IN INDIA:

India has the second largest smartphone users in the world. It has the huge potential on the development of m-commerce. India always been a heaven for retail marketing. In this part of section, author had gone through the research papers that were carried out in the Indian territory.

Dr Sachin Gupta and Mr Anand Vyas (2014)[399] cited out the low resolution of the pictures on mobile device compared to images displayed in other devices like computers, laptops and notebooks.

Dr Sachin Gupta and Mr Anand Vyas (2014)[399] noted out that yet in India, people were unaware of the term of mobile commerce. The educated population in India had grown almost to 74.04%. However, the average “literacy rate” of the world was 84% in 2011. Indian people still dismayed or afraid of purchasing things online not only that, they appeared to be uncomfortable to make a transaction or purchase a product through M-commerce. The mobile network in India is not available to the entire regions. Our Indian people in remote areas still face the slow connectivity problem. Batra & Juneja (2013)[400] had continued the research on m-commerce in India. They had identified concerns encountered by mobile commerce industry.

According to the authors, "the growth drivers of m-commerce were instant connectivity, personalisation factor, mobility factor, immediacy, and localisation". Tandon, Mandal, & Saha (2013)[56] had identified and made known the possible problems in adopting mobile e-commerce. They tried to make known the potential usefulness and practical difficulties associated with adopting the technology. Ambhuti Sharma (2016)[19] mentioned that "security, language barrier, lack of awareness, data transmission rate, lack of network coverage, and low graphical resolutions were the limitations in m-commerce".

Y.V. Sunil Subramanyam and Y.S. Srivatsave (2015)[100] stated many places in India are still under the realm of limited access to internet connectivity, especially 3G or 4G networks. English is the primary language of communication for any online transactions, and the most population in India do not know the English language. They were not even aware of the term called m-commerce. Many literate people in India were not adopting online shopping because they feel uncomfortable and skeptical about adopting the m-commerce considering the insecurities in online transactions.

According to Sharma (2009)[285] the strength of the mobile shopping would continue to grow as the time pass by during this era of the internet with meeting the expectation of smartphone users and mobile service providers in the basic and advanced level of technical and security enhancements.

Archana M. Naware (2016)[101] discussed "the advantages and limitations of m-commerce in India" in the research paper titled "M-Commerce in India".

Dr.N.Muthu and S. Muthukumar (2015)[401] analysed the "emerging trends in e-commerce" in their research paper titled "The Indian kaleidoscope: emerging trends in M-Commerce". They had examined different news stories. They said the Indian online business market in particular that it had a generally ignorant populace, hazard disinclined buyer conduct and trouble in following postal tends to that challenge conveyance framework, particularly in semi-urban and provincial regions (S.Muthukumar and Dr.N.Muthu, 2015)[401].

KhurramNaim Shamsi and Dr.Mohammad Mazhar Afzal (2017)[402] discussed the factors that would affect the m-commerce, especially security threats in India in their research article titled "Security Threats to M-Commerce: Indian Perspective". Authors considered lack of penetration of advanced mobile device, slow transmission speed, unaffordable rate of mobile data, cost of wireless connection, and frequent disconnects were the significant threats of m-commerce development in India.

Pankaj Yadav (2015)[403] had researched "Adoption of mobile commerce in Himachal Pradesh". He had identified the key determinants that "impact customers intention regarding the use of mobile commerce in Himachal Pradesh". The author had collected a sample of 220 respondents. His study depicted three factors, i.e. convenience factor, trust factor, and personal innovation factor that influence mobile commerce. The study showed that convenience factor, trust factor, and personal innovation factor positively influence the acceptance of mobile commerce by customers. Bhatti (2007)[404] said that "personal characteristic of innovativeness was supposed to have a heavy influence to embrace innovation like mobile commerce".

India is a country of various languages, but only two per cent of Indian people favored handling the English language. If the content was in the vernacular language, it would assure faster acceptance by the shoppers and would ensure immediate benefits and success (Pankaj Yadav, 2015)[403]

Swati Jain (2015)[405] described challenges in M-Commerce through a research paper "A Review of SWOT analysis of m-commerce in India", She described few challenges like lack of interoperability among strong devices creates a security problem. Higher operational costs put pressure on retail chains to change; M-commerce needs high memory space in a mobile device. However, the practical limit of a mobile device was limited. Computational power means "to the speed that instructions were carried out and was normally expressed in terms of kilo flops, mega flops etcetera". K. A. Shreenivasan and P. Vaijayanthi (2016)[406] studied mobile commerce in retailing with the new buzz word of M-tailing. Computing power would include this, but the mobile device had it in limitation, In the mobile device the Anti-virus software must be regularly updated for the most effective protection, and it was not easy to implement. M-commerce transactions consist of the gathering of personal data about customers, including their financial history and the current status. Taking into consideration, m-commerce transactions raise privacy and security issues for buyers, as well as concerns regarding mobile spam. Dr Priyanka Khurana (2016)[17] said that m-commerce is necessary for future India in her research paper titled "M-Commerce: A Necessity for Future India". The author argued that the mutual fund industry would have a significant benefit through the m-commerce industry. Dr Priyanka expects m-commerce

would be the most preferred place for marketers, content creators and advertisers to reach out the target audience. She further predicted Indians would do online banking, online shopping, online payments, and e-ticketing using the mobile internet in the future as m-commerce grows up. Gupta & Vyas (2014)[407] said that "m-commerce is at an emerging level in India, and it is complex to adapt". People had started utilizing smartphones for various purposes other than speaking such as using it for accessing websites, surfing, chatting, finally shopping.

Anubhuti Sharma (2016)[19] analyzed m-commerce in India in her research paper titled "M-Commerce: A Revolution in India". The author described "mobile commerce as a process of performing business transactions using mobile and other handheld devices which were connected through wireless technology". According to the author "buying and selling of goods and making a mobile payment over the internet, booking online tickets, downloading games, audios, and videos, using unlimited online software, getting mobile tickets and many more were part of mobile commerce".

Numerous organizations or companies were seizing the mobile commerce opportunities to keep up with the shifting demands and trends in India. M-commerce was at a beginning stage in India. However, the promising numbers in people shifting to smartphones and growing “internet subscribers” gave hope in the progression of mobile technology and its usefulness. Smartphones were not only having the primary functionalities of making calls, sending or receiving messages. There were plenty of multiple activities, tasks and functions that could be accomplished by adopting applications in m-commerce. (Anubhuti Sharma, 2016)[19]

Anurag Mishra, Sanjay Medhavi, Khan Shah Mohd, and P.C. Mishra (2016)[97] studied "the scope and adoption of M-commerce in India". They had collected 425 samples and provided advice to policymakers to use the natures of M-commerce so as flexibility, ubiquity, convenience, and personalization. They suggested, "mobile commerce service givers should improve their devices and services compatibility with various user requirements, experience, lifestyle, and belief in order to be consistent with user expectation as in the findings compatibility being the strong determinant of using mobile commerce".

Thus, India was transpiring to a kind of E-Commerce revolution. With added advantages in Smartphone, experts predicted that m-commerce would change the world of business.

These repeated purchases with the help of mobile applications, the large number of transactions were possible. Marketers could provide variety of the product or services required by the mobile shoppers. In result they would build a long-term value for mobile shoppers (Archana M. Naware, 2016)[101]

Vivek Rajbahadur Singh (2014)[408] analyzed the activities of mobile commerce in Indian territory in the research paper titled "An overview of mobile commerce in India". The author had provided an aspect of the fundamentals of M-commerce, growth drivers, and applications of M-Commerce. He also highlighted issues, tools, benefits and constraints and Future of M-Commerce in India. The author listed down few growth factors of m-commerce including personalization factor, mobility factor, instant connectivity, immediacy and localization, broad reachability, cheap 3G services, ubiquity, and reach

factor. The author stated that mobile commerce was applied in travel ticket booking, entertainment, education, and many more areas. Apart from the benefits, the author stated a few issues in mobile commerce such as security, privacy, data transmission rate, and wireless internet infrastructures. (Vivek Rajbahadur Singh, 2014)[408]

2.13: FUTURE OF MCOMMERCE:

M-commerce has huge potential to growth avenue considering the number of smartphone penetration in the population, development of internet network and technical advancements in mobile application development. In this part of the section of this chapter, the research scholar has tried to understand the future scope mobile commerce. Authors Mark N. Frolick and Lei-da Chen (2004)[5,75] had estimated the mobile commerce possibilities in their research paper titled "Assessing m-commerce opportunities". They had analyzed if mobile commerce could be a solution to business that value the exploration. Authors analyzed the technologies that backed up the mobile commerce, the product sold and the services offered at present. They had also examined the merits and hurdles in mobile commerce, along with problems to be taken care while seeking solutions to the problems in mobile commerce. Shengnan Han, Ville Harkke, Par Landor, and Ruggero Rossi de Mio (2002)[409] reviewed the obstacles and threats that were in mobile commerce industry in their research paper titled "A foresight framework for understanding the future of mobile commerce".

They were concentrating in the industry of mobile commerce as a whole and introduced two general variables; "(1) adoption and diffusion of mobile commerce products and services; and (2) the macro-economic development trend. Based on these variables they had built four foresight scenarios: rapid-up, rapid-down, Slow-down and slow-up"(Shengnan Han, Ville Harkke, Par Landor, and Ruggero Rossi de Mio, 2002)[409]. Herzberg (2003)[410] analyzed new business prospects and problems in planning and executing in protected payment tools. (Antonio Ghezzi, Filippo Renga, Raffaello Balocco and Paolo Pescetto, 2010)[243] Lu June (2012)[370] said that marketers needed to make use of “social channels” to collect response, to disseminate innovative features and new changes that would bring optimistic impact. Most models and studies had been conducted on transaction-based satisfaction studies in relation with continuous intention to use mobile commerce (Zhou, 2011a and Zhao et al., 2012)[411,412], value of data, platform and systems, and outside determinants like cultural impacts and financial benefits (Zhou, 2011b)[412].

Daskshata Argade and HariramChavan (2015)[413], in their research article titled "Improve accuracy of prediction of User's Future M-Commerce Behaviour". They reviewed it as the development of GPS, along with the tracking mechanism of frequency in consumer buying behaviour can help in the prediction of future buying habits. Most mobile shoppers were using credit cards to buy things online. We can track the transaction of the mobile shoppers by tracking their bank transactions. Both the GPS and transaction tracking system can help in the prediction of mobile shoppers ' future purchase (DaskshataArgade and Hariram Chavan, 2015)[413]. Shankar, V., Venkatesh, A., Hofacker, C. and Naik,

P. (2010)[414] studied the retailing environment of present insight and future avenues for research in mobile marketing.

"Mobile Commerce was the use of information technologies and communication technologies for the purpose of mobile integration of different value chains and business processes, and the purpose of management of business relationships.". "M-Commerce was the use of mobile devices to communicate, inform transact and entertain using text and data via a connection to public and private networks". "The core of mobile e-commerce was the use of a terminal (telephone, PDA, PC device, or custom terminal) and public mobile network (necessary but not sufficient) to access information and conduct transactions that result in the transfer of value in exchange for information, services or goods." (Ovum) ". M-commerce was a method of doing business while on the move. M-commerce means mobile shoppers can shop anytime and anywhere. M-commerce had been defined in many ways. Most of the definitions were limited to business transactions that were carried out using mobile device and transfer of any monetary values. M-commerce had a lot of unique characteristics. Based on different studies, m-commerce characteristics can be listed as 1. Mobility: Users can carry their devices' such as tablets, smartphones, and PDA anywhere and perform mobile commerce task. 2. Ubiquity: Accessibility to the information at any time & anywhere in the "real-time environment". 3. Diverse users: m-commerce had diversed users, including the youngsters, and older people.

4. Ambidextrous: people can use M-commerce for play and work, 5. Willingness: mobile shoppers were ready to pay the mobile data and the Smartphone or other devices (Khurram Naim Shamsi and Dr Mohammad Mazhar Afzal, 2017)[402]

June Lu (2014)[370] analyzed that social influence and personal innovativeness were important to continue with mobile commerce. A study of Evans and Wurster (1997)[418] showed that mobile internet revolution had changed the established paradigms and had led to a reconfiguration of value prepositions. Freestone and Mitchell (2004)[404] claimed that this generation was interested in adopting new technology because they were technology savvy. Haytko and Philips (2008)[428] distinguished that problems related to retail patronage, connectedness, feeling of accomplishment, and socialization influenced mobile shoppers to buy products online. K.S., Sanjay (2007)[95] mentioned that mobile network provides good flexibility and effectiveness to its subscribed users than the landline phones. Kumar and Lim (2008) noticed that age affects loyalty decisions and perceptions on mobile service. Mahatanankoon, Wen and Lim (2005)[406] suggested that "acceptance of mobile commerce applications mainly based on purchasing products, locating family and friends or procuring instant coupons". Manjoor Amir (2018)[278] stated that there were numerous advantages and benefits in the adoption of e-commerce. Kim, W.B. and Rhee, K.Y. (2004)[393] investigated "the adoption and use of the internet in South Korea". Mobile commerce helps to do transactions from home itself. It gave globally known safety features, reliability, and quality of products so that a particular website could increase the major part of share. Martin and Bush (2000)[407] said that younger generations were trendsetters for each other and global smartphone users at big. Teenagers acquire the habit of consumption and influence from the parents, media, peers, and teachers.

McKnight (2002)[276] identified that "trust was important because it helps mobile shoppers overcome perceptions of uncertainty and risk". N. Elangovan and P. Agarwal (2015)[430] studied "factors that were influencing user perception on mobile social networking apps". Rousseou et al. (1998)[296] believed that "trust was defined as a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intention or behaviour of users". Schejter, Serenko, Turel and Zafat (2010)[431] stated that "customers of mobile and wireline market represent two distinct groups who are driven by different values and behaviours that exhibit dissimilar psychographic and demographic benefits".

M. Munusamy and H.P. Leang (2002)[411] analysed "the characteristics of mobile devices and an integrated M-commerce infrastructure for M-commerce deployment". The network infrastructure was a crucial component of guaranteeing that possible threat "to the overall ICT security posture of CGIAR centres were managed effectively". As PDA and wireless phone networks had become very common, it had grown in complexity and become alarmingly difficult to ensure the safety and security against electronic attacks in the form of malware and other viruses. The attack on the mobile device by a virus, use passwords and PINs, which were easily guessable and predictable, the possibility of messages getting lost, spoofing on payment provider and cardholder or message replay.

The need for protecting m-commerce transactions, stolen or lost devices were the most imposing threat to data on mobile platforms at present. The increasing number of more merchants doing business on smartphones and tablet computers, the security enablement departments were being tasked with keeping the email and application data on those smartphones and other devices secured. Privacy threats in mobile commerce were rising day by day. People were concerned about the unauthorized access to voice message and data in smartphones. A mobile device had small size as compared to computers or laptops or notebooks; sometimes its affect the m-commerce activities. There was a need for standards in support of mobile commerce in today's fast lifestyle. (Swati Jain, 2015)[405]

2.14: CONCLUDING REMARKS:

Mobile commerce had evolved with a combination of multiple dimensions of commerce, Smartphone technology, internet connectivity and software of mobile application development in this section of the chapter, the researcher had analyzed the evolution and features of mobile commerce.

Mobile applications had evolved from mere applications to the lifestyle statements that helped the mobile shoppers to search for products, helped them to the specific stores, conduct purchasing, and managing accounts. The scope in mobile commerce had included the transactions that were even of small value which might not be profitable for the smaller firms (Malik, Kumra, & Srivastava, 2013)[412]. Mobile commerce allowed various new breaking points to firms to retain the mobile shoppers and attract newer ones. Companies increased their earning capacity by involving themselves in the mobile commerce activities in which mobile shoppers could pitch in frequently for any of their shopping needs. The mobile commerce features enabled mobile applications to accommodate mobile users with quicker

access to information, convenience, mobility, ease of use, flexibility, and a perceived protected environment (Vigar-Ellis & Bredican, 2014)[432]. Mobile shoppers were more willing to carry out the business activities on mobile websites or mobile applications that were having current, relevant, accurate, precise, and complete data available in them (GAO, Waechter, & Bai, 2015)[433]. It was possible to the marketers who were able to understand the diversity of the shoppers' roles that were crucial factors for a successful mobile services (Zhou, 2014)[415]. A few prospects of mobile shopping culture would depend on the functionality, performance, and usability of the user-friendly website or applications (Sarrab, Al-Shihi, & Al-Manthari, 2015)[416].

A successful mobile application would count on artificial intelligence, interaction, mobility, and "technology-based resources" (Torres et al., 2015)[417]

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