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Security Threats to M-Commerce: Indian Perspective

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***Abstract*:-** There is a major stress on M-Commerce due to the services offered duringthe mobility. It enables mobile users to engage wirelessly in online trading regardless of time or location. The tremendous growth in mobile phone penetration shows that major Indian population has adopted to mobile phone. Advancement in mobile technology and its usage is not limited to making basic phone calls, but can be used virtually in every sector of human activity—private, business, and government. However, M-commerce is still in the emerging level in India. M-commerce is complex in nature and includes changing procedure in market. Better understanding of the complex issues at stake is needed before effective systems of this kind can be designed and built. In this paper, researchers attempted to answer the research question that `Is India ready for M-commerce?' In this study, researchers identified the potential of M-commerce by reviewing its current status in India and considering the online users and their usage behavior. Through this paper, researchers attempt to identify the issues for the future growth of M-commerce with its present volume transactions in India and highlighted critical challenges before M-commerce would become an asset for common people. Researchers observed that customized and innovative services, right regulation and right models will drive the future M-commerce and it will occupy large segment in Indian market. The purpose of this research paper is to identify factorsaffecting the adoption of M-commerce in India. Its theoretical contribution is to explain how the M-commerce is penetrating in India and to identify security threats to it.

Keywords:- *online trading, security threats, mobile penetration, M-commerce in India, online users and usage behavior in India, Challenges of M-commerce in Indian market*

I. INTRODUCTION

"Mobile Commerce is the use of information technologies and communication technologies for the purpose of mobile integration of different value chains and business processes, and for the purpose of management of business relationships." (Webagency) "M-Commerce is the use of mobile devices to communicate, inform transact and entertain using text and data via a connection to public and private networks." (Lehman Brothers) "The core of mobile e-commerce is 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)

"The use of mobile handheld devices to communicate, interact via an always-on high-speed connection to the Internet." (Forrester)As technologies advance; mobile phones, tablets and portable notebook computers arebecoming commonplace. The computational power of these devices continues toincrease, while at the same time they become ever smaller and lighter. A new spectrum ofmobile products is emerging that combine a range of computational capabilities into onephysical device. These mobile convergence capabilities enable people to remain online,accessing all their data, such as email and stock quotes, while on the move.While there are many obvious advantages with these devices, they also affect traditionalbusiness processes, and there are security issues that need to be considered. Organizations need to be concerned about security, including theft or loss of mobilesdevices used byemployees, corporate data leakage via these devices, possible virusinfection, and possibleunauthorized traffic interception. While enjoying the convenienceand efficiencies brought about by new mobile technologies, appropriate securitymeasures should be designed and implemented in order to counter any threats to sensitivedata introduced by the use of mobile devices.Nowadays, Cashless transaction and online purchase/payment are buzzwords in India. After government's decision to discontinue certain currency notes, a major emphasis is being laid on M-Commerce. M-commerce is the way of doing business in a state of motion [1][2][3]. M-commerce means that customers can shop anywhere, anytime [4]. However, few questions Arises - Are we ready for it? Do we have enough infrastructure to support it? Are we technologically sound enough to adopt new systems? In this paper, we provide a brief overview of the most common mobile technologies, andoutline the weaknesses around the use of these technologies. We also provide a set ofgeneral tips to end-users in maintaining personal security on mobile devices. This paper evaluates the position of M-commerce in India, which will be further helpful to for increasing productivity in India. At the same time, it will also useful to design and implement different models of mobile commerce in India as model for the commerce in India.

II. M-COMMERCE DEFINED

The term m-commerce has been defined in avariety of ways in different literatures[5], [6], [7], [8]. Some of these definitions seemto restrict m-commerce to businesstransactions that are conducted solely over amobile telecommunication network andinvolve the transfer of monetary values. However, m-commerce transactions do notnecessarily involve the transfer of money andcan be conducted over other means ofwireless communication. Furthermore, allcommercial transaction steps need not becarried out electronically. While sometransactions are initiated and completedelectronically, some transactions may beinitiated electronically but completed off-line.Therefore, in this paper, m-commerce isdefined as a set of activities relating to theexchange of information, services and goodsfor either money or other information, servicesand goods, which is conducted fully or partlyonline over wireless technology using mobiledevices. In a fully online transaction, alltransaction processes, which include theadvertising, negotiating, ordering, paymentand delivery processes, are conductedelectronically. In a partly online transaction,the transaction may be initiated electronicallybut not completed electronically. Steps like the advertising, negotiating and orderingprocesses may be done online but other steps like payment and delivery processes may bedone off-line.

III. CHARACTERISTICS OF M-COMMERCE

M-commerce has several uniquecharacteristics. Based upon differentliteratures [9],[10],[11]m-commerce'sdistinguishing characteristics can besummarized as follows:

1. **Mobility:** Users can carry their smart phones or other compatible devices such asTablets, PDA, etc. easily and can perform the different M-commerce functions
2. **Ubiquity:** Information can be accessed easily and in a real-time environment.
3. **Varied users:** M-commerce has varied users from elementary school students toGrandpas, at varied locations.
4. **Ambidextrous:** People uses M-commerce for work & Play i.e. for Business purpose and forpersonal fun.
5. **Willingness:** People are willing to pay for mobile services.

IV. PURPOSE OF THE STUDY

M-commerce has become the latest topic for today. Business organizations have been restlessly evaluating the revenue potential of the m-commerce market and developing business models to exploit the huge profit potential of this new market. So the main purpose of this paper is to:

1. Provide a brief description about mobile wireless technologies.
2. Understand unique feature and benefits of m-commerce.
3. To analyze various factor that are affecting m-commerce.
4. To analyze the security challenges to m-commerce.
5. To analyze trends of M-commerce in India.

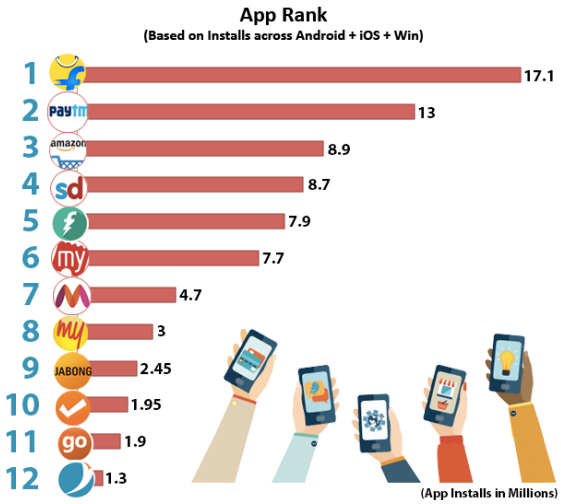
V. RESEARCH APPROACH

In an attempt to learn as much as possible about the M-Commerce, we conducted in depth research to obtain most of the necessary data. Through content analysis of firm disclosure data, historical data analysis, company case studies, and sector reports, we gained much valuable information pertaining to our research. We used secondary sources of data collection such as the Internet, websites, books and magazines etc.

VI. RISE OF □-COMMERCE IN INDIA

India is the largest mobile market in the world after china. The number of internet users in India are expected to cross400 million in 2017[12]. One of the main reason for this popularity is internet facility in mobile at feasible rate [13]. In today's economic scenario, business and public sector are utilizing large number of cell phones. Even mobile phones/smart phones can be used for payment. Reliance also offer the above discussed services [14]. Kenyan Pisa, an open wallet system, works for rapid growth in M-commerce service in India.

2014 had been a landmark year for India in the sector of M-commerce [15]. Accordingto Nielsen survey in 2014, smartphone penetration in Indonesia (23%), India (18%) and the Philippines (15%). In India, Wi-Fi is often used by mobile users in shopping malls or internet cafes. This reflects the slow pick up of 3G connections in India, which have reached a penetration level of 3.4%.According to PayPal mobile commerce, the transaction made with mobile phones have increased by over 250% compare with the last financial year. Most of this investment has gone into the development of marketing& manpower. But most of the marketing money is being spent to manufacture the mobile devices. Smartphones and "Mobile Only" Internet users are growing rapidly in India [16]. Let's take a visual look at how some of the top M-commerce applications of India have grown, which also points towards the overall growth of mobile commerce in India.



VII. TRENDS OF M-COMMERCE IN INDIA

India's online retail market is on the radar of global investorsand M-Commerce players, which have announced investmentstopping $3.6 billion in the past three months, including $2billion in Amazon, $1 billion in Flip kart, and potentially$650 million in Snap deal. Growth in India's online retailmarket is powered by its fast-growing smartphonepenetration, as customers are increasingly using their mobilephones to buy products online. More than half of Snap deal'sand Flip kart's sales and nearly 35% of Amazon's trafficcome from mobile in last few months.While India is still asmall M-Commerce market, it's growing at the fastest rate inthe Asia Pacific region. According to Forrester's Asia PacificOnline Retail Forecast, 2014 to 2019, India will have 125million online buyers by the end of 2019. Forrester expectsmobile sales to reach$19 billion by 2019. Key factors driving M-Commercegrowth include customer demand and investment from keyplayers:

1. More people from tier two, three, and four cities arebuying on mobile. Nearly one-third of India's 1.2 billionpeople lives in tier one through tier four cities — the neartermaddressable market for M-Commerce companies. Only8% of the populace lives in the top eight tier one city,where M-Commerce penetration is already high. Othercities face low smartphone and 3G penetration. Smart phones are enabling m-commerce intier two, three, and four cities where broadbandpenetration is very low. Mobile phones are the primarypurchasing channels in tier three cities, regardless of howfrequently a consumer purchases. The use of PCs foronline buying is lower in tier three cities than in othertiers; around 62% of online fashion store Jabong's recentsales and 45% of the revenues of Myntra (acquired byFlipkart in May 2014) come from physical stores in tiertwo and tier three cities. We expect people living in tierfour cities (16% of India's population) to behave similarlyto those in tier three and adopt M-Commerce.
2. Vendors are investing more in mobile platforms. Keymarket players including Amazon, Flipkart, Jabong, andSnapdeal have already promised increased focus on andinvestment in the mobile space. Paytm is looking to raise$200 million to become full-fledged m-Commercecompany. Paytm aims to process 1 million mobile ordersper day in 2017, up from around 320,000 currently.Another player, Freecharge, also raised $33 million tobuild an offline-to-online advertising platform to tap thegrowing m-Commerce market.

India's Mobile Commerce Growth in 2016 hasbeen a landmark year for Indian m-commerce withbillions of dollars invested across top commerce players.Most of this investment has gone into the development ofinfrastructure, marketing & manpower. Interestingly,most of the marketing money is being spent to grow themobile base. Smartphones and "Mobile Only" Internetusers are growing rapidly and India is expecting to doubleits base of smartphones and mobile internet subscribersby the end of 2017.

VIII. SECURITY CHALLENGES TO M-COMMERCE

As mentioned earlier, m-commerce is not possible without a secure environment, especially for those transactions involving monetary value. Thechallenges of M-commerce in India are listed below:

1. Accessing the Internet by mobile phones is currentlyhindered down by slow transmissionspeeds,frequent disconnects, cost of Wireless connectionand wireless communication standards over whichdata is transmitted.
2. High-speed-bandwidth Internet connection notavailable to most citizens of the nation at anaffordable rate.
3. Payment system that connects the utility of themobile phone and the Internet together for the wholenation.
4. Limited Internet access among customers, lack ofawareness about services and security amongcustomers.
5. Lack of penetration of advance mobile device inrural area.

6. Multiple issues of trust in m-commerce technology,doubts about m-commerce security, and lack ofwidely accepted standards and lack of paymentgateways (privacy of personal and business dataconnected over the Internet not assured; security andconfidentiality of data not in place)
7. To deploy Ubiquitous IT Infrastructure and itsmaintenance: IT infrastructure can be defined asphysical components such as hardware, softwareand network facility plus human components suchas human expertise, manuals, and corporate cultureconstitute IT infrastructure of an organization. [17],[18], [19].

IX. SOLUTIONS ON HOW TO SOLVEMAIN CHALLENGES OFM-COMMERCE

Being one of the most constantly changing sectors inthe global economy, mobile payments has differenttechnologies and business models aiming diversemarkets based on how mobile users choose totransact. Consumers' payment options widen forboth virtual and actual goods as a result of newmobile payment networks emergence. Even thoughthe challenges of high deployment costs, consumerconfusion and increased merchant competition, agenuine end-to-end m-payment solution whichtradesfolk can be used in driving consumer behaviorand more revenues is a paramount market need.Next generation future mobile commerce should allow user to do any sort of transactions including buyingand selling of the goods, asking any services, transferring the ownership or rights, transacting and transferringthe money by accessing wireless internet service on the mobile handset itself. Presuming its wide potential reach,all major mobile handset manufacturing companies should make WAP enabled smart phones and providing themaximum wireless internet and web facilities covering personal, official and commerce requirement to pave theway of m-commerce that would be very fruitful for them. It should be convenient and providesinstant connectivity.Localization of products and services-knowing where the user is located at any giventime should also be provided.

X. CONCLUSION

As mobile commerce is an emerging market, there aresubstantial opportunities and weighty risks. Thechanging market requires innovative and diversifiedenvironment for stakeholders. The research reflects that M-commerce is adding significant value to the businesses in India. Key drivers of M-commerce include widespread adoption of mobile phones and smartphones among rising affluent middle class consumers. There will be no m-commerce without security of the underlying technologies. Some barriers like lack of user trust and awareness in M-commerce and m-commerce technology, usability problems & language barriers, low internet connectivity, technical limitations and doubts about security and lack of widely accepted standards can little hinder the growth of m-commerce in India. In this paper we discussed security issues relating to network and service technologies. One of the main future challenges will be to unify payment solutions, providing the highest possible level of security.In times to come, the M-commerce is expected to become more secure as government and companies alike are investing on security etc. to provide better services to safeguard interests of users of M-commerce. Future seems promising with new 4G technology.

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