The Awareness of M-commerce Amongst Customers Today

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Abstract

Mobile commerce (m-commerce) refers to the ability to conduct wireless commerce transactions using mobile applications in mobile devices. The initial debate on m-commerce was characterized by a high level of optimism, followed by a more nuanced and realistic approach. It is a new concept and is emerging in a context of an established norms, rules and standards. The purpose of this study is to provide a better understanding on how e-commerce has revolutionized traditional commerce to m-commerce and how it has changed customer today. Along with it various benefits and obstacles for m-commerce have also been discussed.

Key Words : *M-Commerce, Customers, Obstacles, Mobile Devices,E-Commerce*.

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1. Introduction

E-commerce is defined as any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact .It is stated that the e- commerce is considered as a process of doing business electronically which involves automation of various business-to-business and business-to-consumer transaction. E- commerce is not just considered as a single entity of technology but a combination of technologies where applications, processes, business strategies are necessary to do business electronically.

The approach of e-commerce should be defined in a broad terms since the Internet is now at the forefront of discussion relating to the transaction over Internet. Therefore, this focus is more explicitly followed in a way where e-commerce involves the undertaking of normal commercial, government, or personal activities by means of computers and telecommunications networks; and includes a wide variety of activities involving the exchange of information, data or value-based exchanges between two or more parties .

E-commerce has revolutionized traditional commerce and boosted sales and exchanges of merchandise and information, with the introduction of the World Wide Web . In the 1990's wireless networks burst onto the scene with promises of big payoffs that rarely materialized. E-commerce had begun to change the ways of thinking as well having provided new venues for doing business. The new opportunities of Internet trading were constantly exploited and vast fortunes were made seemingly overnight. As a consequence, it looked as though there was not a day that passed without reports of a new venture creation and claims of new e-commerce models .

More recently, the advent of wireless and mobile technology as a subset of e-commerce has created both new opportunities and new challenges for the business community. The emergence of wireless and mobile networks has made possible the admission of e-commerce as a new application and research subject in the area of m-commerce, which is defined as the exchange or buying and selling of commodities, services, or information on the Internet through the use of mobile handheld devices. M-commerce has come forward to become the hottest new trend in business transactions .

M-commerce is an emerging discipline involving applications, mobile devices, middleware and wireless networks. While most of existing e-commerce applications can be modified to run in wireless environment, m-commerce also involves many more new applications that become possible only due to the wireless infrastructure. It is a rapidly evolving arena, both strategically and technologically. M-commerce is considered as an effective way of delivering e-commerce to consumers regardless the time and location. To gain the advantages of m-commerce, companies have

begun to offer m-commerce options for their consumers in addition to the e-commerce they already provide .

In its present state, m-commerce can be viewed as an extension of conventional, Internet based E-commerce, which adds a different mode of network and accommodates different end users' characteristics. The prediction states that the mobile and wireless system will control the Internet industry in the future and it will materialize the e-commerce and m-commerce into a singular blended entity.

M-commerce is defined as a means of conducting commercial transactions via a "mobile" telecommunications network using a Communication, Information, and Payment (CIP) device such as a mobile phone or a palmtop unit . In another sense, m-commerce is simply defined as a way of exchanging products, ideas and services between mobile users and the service providers. M-commerce is creating entirely new service opportunities such as payments, banking and ticketing transactions through wireless device. Secure payment and ease of use are key features of m-commerce, along with immediacy, personalization, and location awareness.

E-commerce has resulted a tremendous impact for many companies to interact with their prospective customers and e-business had the similar impact on either side of supplier and employee. In same manner, it is too early to predict about the triumph of m-commerce and it can only be speculated that it will have even greater impact since its tentacles spread everywhere. Mobile infrastructure and devices, applications and experiences, and relationships and supply chains are the unique evident for m-commerce success . Considering the promising success of m-commerce many companies are implementing and developing their Internet facilitated E-commerce activities; since a new wave of technology-driven has innovated. This innovative technology has brought the progress in wireless technology and the numbers of mobile devices are expected to increase rapidly.

The above mentioned discussion implies that m-commerce can be interpreted as a subset of e-commerce by referring to those e-commerce activities which involves wireless technologies i. e., mobile devices like headphones, personal digital assistants or handheld computers. E-commerce and m-commerce are having the conceptual differences based on the mobility or the location, respectively. Regardless to the transactions and information access, the location of m-commerce users can be determined which unleashed the new form of services and transactions. On the other side, corporations can reach specific users anytime and anywhere, not only with regard to a specific person, but also with regard to a specific geographical region, which again enables new forms to disseminate information to consumers.

1.2 Problem Discussion

Wireless internet users are expected to rise worldwide .The third generation technology (3G) has innovated the new features in mobile technology and revolutionized to the new consumers market. The introduction of 3G technology will become more widely available, the benefits and exciting potential of this technology will become more apparent to financial audiences and consumers alike. The subsequent aftermath of wireless technology and mobile computing applications in marketing have been over hyped .

Wireless technology is no longer considered as a novelty and its location is everywhere. It has eradicated the complex functionality in mobile technology and added new functions to smoothen the consumer lifestyle. Today's, business people are accessing their e-mails, placing orders and logging on to the company networks from the road; and the young professionals are not tethered to their wired-line desktop computers and are buying smart phones (personal digital assistants (PDAs)/phone combinations). Wireless technology has become ingrained in all walks of global people's life with in the last few years.

M-commerce service provider has no shortage of enthusiasm to meet the consumer's needs. A high level optimism was characterized at the early stage of m-commerce followed by more nuanced and realistic approach. Many users are still uncertain to welcome the new technology and it may be too early for them to contemplate the idea. Though there is market enthusiasm and huge number of mobile device users on market to underpin the potential market of m-commerce but widespread acceptance is still unknown. There has been a tendency to over hype the m-commerce development and its associated technologies that are not yet ready to be fully implemented by business .

M-commerce technology is entirely different from e-commerce where processing is accomplished through the internet via a browser and being connected through wired Internet connection .Shopping through mobile device is considered as underwhelming. Aside from the standard procedure of billing and pricing process, the mobile device interface is inadequate for the online shopping considering its size, color, speed of data transferring etc. Additionally, an incompatible device makes a deep impact for burgeoning m-commerce prospect .

Business marketers are trying to build a long-term relationship with their customers but the trust is still considered one of the focal point. Trust is a complex social phenomenon that reflects technological, behavioral, social, psychological, as well as organizational aspects of interactions. Every business transaction requires an element of trust and it becomes mandatory, especially those conducted in the uncertain environment of e-commerce. Consumers are also concerned about security and privacy in the wireless environment. It often arises with new web enabled mobile technology which supports enhanced capabilities for collection, storage, use and communication of personal information. Recent reports of concerns about privacy on wireless Internet are on the rise. To gain the market acceptance, the m-commerce service provider has to make sure about the security related matter as well as the convenience to use. Branding and proper implementation of strategies would boost consumers' confidence to uptake m- commerce.

The Benefits of M-commerce

Mobile devices are widely accepted due to the convenience and it will evolve into "personal trusted devices" which pack users identity, purchasing power and benefiting various aspects of their daily lives. It plays an important role for users in order to facilitate the vision of an intelligent ambience, by collecting and communicating various personal habits and preferences, and enabling their environments to sense and react . Wireless communications and services are enabled by the convergence of two technologies, the Internet and wireless technology such as mobile phones and personal digital assistant . And today's mobile devices fulfill this need for real-time information and communication independent of the user's location .

A user can connect to the Internet wherever and whenever they want since the mobile Internet has unique strengths over the stationary Internet . Abundant information has indicated the proliferation of wireless Internet via mobile devices which is creating unparalleled opportunities for m-commerce to leverage the benefits of mobility. It allows consumers and businesses to build connectivity by transcending time and place, increasing accessibility, and expanding their social and business networks .

1. Mobile Financial Services

The rapid pace adoption of next-generation mobile handsets has created opportunities for new and innovative mobile services. One of the most promising, while still marginally adopted, are mobile financial services. The wide penetration and personal nature of mobile phones, the overall stability of mobile communication technologies, and the positive experiences with m-commerce payments have made mobile solutions applicable for a variety of financial services. Today, mobile payments are mainly used to pay for

popular mobile content and services since there are few alternative payment solutions available.

Mobile   Payments

Mobile payments are expected to become one of the most important applications in m- commerce. M-commerce involves m-payment, which is defined as the process of two parties exchanging financial value using a mobile device in return for goods or services. Mobile payments can be divided into Macro and Micro-payments. Therefore, a widespread use of mobile phone has emerged a number of payment schemes which allow the payment or goods/services from the mobile device.

Mobile Banking

Mobile banking services are valued by users because of the inherent time and place independence, and the overall effort-saving qualities. Mobile banking services enable users to receive information on their account balances via SMS. The new WAP and Java-enabled mobile phones using General Packet Radio Service (GPRS) support a wider variety of banking services such as fund transfers between accounts, stock trading, and confirmation of direct payments via the phone's micro browser. The mobile services are typically modified versions of the Internet banking services of the particular bank and the architectures are backed by several banking industry consortiums.

2. Mobile Advertising

Mobile advertising is a very important class of m-commerce; it augments location information with personalization and delivers the obtained history of user's purchases habits. Advertising on mobile devices has large potential due to the very personal and intimate nature of the devices and high targeting possibilities. By keeping track of user's purchasing habits and current location, a targeted advertising campaign can be performed. Messages can be sent to all users who are currently in a certain area (identified by advertisers or even by users) or to certain users in all locations. Depending on interests and personality types of individual users, advertisers could decide whether a "push" or "pull" form of advertising is more suitable. Most users did not mind being pushed for mobile location-aware services information, as long as they really needed the information. It has been demonstrated in several trials that mobile users are willing to receive advertising messages with incentives.

3. Mobile Entertainment

Mobile entertainment (m-entertainment) is concerned with providing amusing and

enjoyable services for users via wireless technology to mobile devices. Most people make some form of traditional 'pure' entertainment part of their daily lives, bringing these forms of content to mobile devices is an appealing notion. Mobile entertainment is a Business-to-Consumer service which is done during leisure time. Mobile Entertainment Services and Games (B2C) are applications providing entertainment services to users on a per event or subscription basis. These include video- on-demand, audio-on-demand, and interactive games. It appears that mobile games will become one of the drivers of the wireless Internet, especially if group connectivity and response time issues can be addressed.

Mobile Gaming

Mobile devices offer the opportunity to play games nearly everywhere. Moreover, networked games allow individual players to interact with other people and to participate in a larger gaming world, which also provides for new business opportunities. Advances in mobile computing and wireless communication technology enable the creation of games with appealing graphics and game play on a variety of mobile devices ranging from smart-phones to PDA's and other portable computing devices . Therefore, the popularity of mobile games played on portable handsets is increasing and the huge possibilities for growth in this area are already being taken seriously by traditional "mobile telecommunications" handset vendors. Device makers are designing GSM handsets with hardware and user interfaces specifically designed for gaming as exemplified by Nokia with their recent N-gage device. In essence these new devices offer players the ability to play head to head with their friends or any other players at any time and in any place .

Mobile Music

A key advantage of mobile music is having user's phone and music player in the same small device. Nokia has developed many mobile phones with integrated technologies to play music, either from a digital music player or an FM stereo radio. A user can hear Stereo FM radio, tune in to visual radio to see the screen of mobile device, listen music as well as to download digital music tracks in AAC format. Instead of carrying a MP3 player a user can carry a mobile phone as a substitute .

4. Mobile Shopping

Mobile extends users ability to make transactions across time and location and creates

new transaction opportunities. It is important to note that only a part of the purchasing process is conducted with the mobile terminal. The basic point is that user needs to know what he/she wants in advance of making a mobile purchase. Moving forward, it seems most likely that a shopping list might be created with a web interface, which may then be executed from a mobile. At the current stage of technological development the customer must ideally be faced with a one-button purchase experience for mobile shopping. The purchase suggestions will often be based on the user's past behavior patterns .

Mobile Ticketing

Mobile electronic purchase or reservation of tickets is one of the most compelling proposed services, because ticket reservation/purchasing is hardly a pleasant expertise today. Either one has to go in person to a ticket booth, or has to call an agency or the outlet. Calling outside opening hours means having to go through a lengthy IVR (Intelligent Voice Response) system. It is clearly more convenient to select and book tickets for movies, theatres and concerts directly from the mobile device, because often the decision to purchase is made while outside or on the move among friends .

The Obstacles to Adopt M-commerce for General Users

Mobile applications have their own set of obstacles for user's to adopt m-commerce services. This definitely translates into an additional burden on application developers. Developers are put on the front line for satisfying the promise of businesses and service providers in delivering Internet content to mobile devices. The developers must address to successfully define, design, and implement the necessary hardware and software infrastructure for m-commerce. Communication channels, their reliability and efficiency are still a concern to extend the m-commerce service for mobile device users .

1. Security Challenge

M-commerce is not possible without a secure environment, especially for those transactions involving monetary value . The screen size of mobile devices is very crucial when designing interfaces for users. Mobile devices offer limited display, which is difficult for users to display and browse online catalogues . It is highly personalized and contain confidential user information; therefore they need to be protected according to the highest security standard. Depending on the point of views of the different participants in an m-commerce scenario, there are different security challenges .

The Mobile Device. Confidential user data on the mobile device as well as the device

itself should be protected from unauthorized use. The security mechanisms employed here include user authentication (e. g. PIN or password authentication), secure storage of confidential date (e.g. SIM card in mobile phones) and security of the operating system.

Malicious SMS Messages. Applications such as mobile advertising and mobile alerts typically send advertising and alerts to mobile users using short messaging service (SMS) messages or short paging messages. A malicious service provider or participant may send out malicious SMS messages that hide nefarious instructions .

The Radio Interface. Access to a telecommunication network requires the protection of transmitted data in terms of confidentiality, integrity and authenticity. In particular, the user's personal data should be protected from eavesdropping. Different security mechanisms for different network technologies (i.e. in 2G, 3G and other systems.

The network operator infrastructure. Security mechanisms for the end user often terminate in the access network. This raises questions regarding the security of the user's data within and beyond the access network. Moreover, the user receives certain services for which he or she has to pay. This often involves the network operator and he or she will want to be assured about correct charging and billing.

The kind of m-commerce application. M-Commerce application, especially those involving payment, need to be secured to assure customers, merchants and network operators. For example, in a payment scenario both sides will want to authenticate each other before committing to a payment. Also, the customer will want assurance about the delivery of goods and services. In addition to the authenticity, confidentiality and integrity of sent payment information, non-reputation is important.

Virus Attack. Consider the mobile software-downloading scenario where a mobile user is asking for a resource from the network. An adversary can respond by a fake resource with the same name as the real resource the original user is looking for, but the actual file could be a virus.

2. Customer Trust in M-commerce

Gaining customer trust in m-commerce; which uses radio-based wireless devices to conduct business transactions over the Web-based e-commerce system is a particularly daunting task because of its unique features. Mobile devices have limited computational

power, memory, and battery life. Wireless networks have their problems too, including limitations in bandwidth, connection stability, and function predictability. Also, these networks have a relatively high operation cost, lack a standardized protocol, and data transmitted wirelessly is more vulnerable to eavesdropping.

The reliability and security needed to cultivate online trust are equally important for m-commerce technology, especially in the early stages, since disappointing performances of the wireless communication system will make customers suspicious of its ability to deliver on promises. As mobile technology evolves, focus will shift from engendering customer trust in technology to engendering trust in vendors.

The technology trust and vendor trust are equally important in securing customer trust. Building customer trust in m-commerce is a continuous process, which extends from initial trust formation to continuous trust development, and with mobile technology and vendors as essential framework elements. In order to enhance trust in mobile technology, technical hurdles must be surmounted. Design improvements are needed on current mobile devices that enhance usability, enabling customers to perform business activities easily and effectively at no sacrifice to mobility and flexibility. Also, security must be designed into the system. Encryption, digital certificates, and private and public keys are among the measures that will help meet future security requirements in the mobile environment. Compared to mobile technology trust building, building trust in mobile vendors is more elusive and challenging. To engender initial trust formation in an industry unfamiliar to most potential customers, this young industry must disseminate information, cultivate interest, and convince potential buyers their needs will be met by m-commerce.

Specific ways for companies to initiate customer trust in the mobile environment include :-

Enhance customer familiarity. People tend to trust the well-known, and familiarity obtained through frequent exposure has the potential to stimulate trust. Publicity and advertising are two effective ways to achieve the desired familiarity. Both approaches enable customers to familiarize themselves with the company and its business. Repeated exposure to a company name, logo, design, and services reminds customers of the company and its business, and leads to familiarity.

Build vendor reputation. Reputation reflects company history, and suggests its past behavior. Extra emphasis should be placed on developing company reputation because of the novel nature of m-commerce. A good reputation suggests certainty and less risk in conducting business, and thus helps foster customer trust.

Deliver high-quality information. The quality of the information posted on the company

Web site has a direct impact on potential customers' perceptions of the company and its products. Similarly, the quality of information delivered to customers' mobile devices will also affect trust. Accuracy, timeliness, and usefulness are primary indicators of information quality.

Findings and Conclusions

There are different kinds of benefits that can influence consumers to adopt m-commerce such as *Mobile financial services, micro-payments, macro-payments, mobile banking, fund transfer between accounts* and *stock trading*. M-commerce is a latest phenomenon of wireless technology in order to extend its various services for the mobile device users. The adoption rate of mobile device is increasing day by day and mobile financial services have started to grow attention at a marginal pace toward users.

Digital network has accelerated the acceptance of mobile phones and m-commerce services. Low level of income and the clarity about the wireless network service sill work as a phobia for the consumers.

Users simply ignore macro-payments with a mobile device in order to avert the possible risk in wireless environment. Online experience of buying high priced product is rather preferable considering the convenience of wide options than wireless environment.

In mobile banking facility checking balance was little bit accepted considering the facility of a roaming situation but no further intention was extended to adopt the mobile banking. In contrast, online banking was much preferable by users considering the benefits.

Thus we can say that :

- Individual who has greater intention to use mobile device rather than a communication purpose were more likely to have greater intention to adopt m- commerce.
- Mobile device users with a high income level will have more intention to adopt m-commerce than the low level of income group.
- Ease of use has an important influence to adopt m-commerce rapidly by mobile device users.

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