M-Commerce

(Mobile Commerce)

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Abstract— **Mobile Commerce is the subset of e-commerce, which includes all e-commerce transactions, carried out using a mobile (hand held) device. This paper attempts at figuring out the relevance and potential role that m-commerce can play in the development of business environment, The use of wireless handheld devices such as cellular phones and laptops to conduct commercial transactions online. Mobile commerce transactions continue to grow, and the term includes the purchase and sale of a wide range of goods and services, online banking, bill payment, information delivery and so on.**

Keywords— *M-commerce, mobile commerce, m-commerce services, Applications of m-commerce*

I.   INTRODUCTION

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs).

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs). Known as next-generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in. The emerging technology behind m-commerce, which is based on the Wireless Application Protocol (WAP), has made far greater strides in Europe, where mobile devices equipped with Web-ready micro-browsers are much more common than in the United States.

In order to exploit the m-commerce market potential, handset manufacturers such as Nokia, Ericsson, Motorola, and Qualcomm are working with carriers such as AT&T Wireless and Sprint to develop WAP-enabled smart phones, the industry's answer to the Swiss Army Knife, and ways to reach them. Using Bluetooth technology, smart phones offer fax, e-mail, and phone capabilities all in one, paving the way for m-commerce to be accepted by an increasingly mobile workforce.

As content delivery over wireless devices becomes faster, more secure, and scalable, there is wide speculation that m-commerce will surpass wire line e-commerce as the method of choice for digital commerce transactions.

II.   HISTORY OF M-COMMERCE

Mobile commerce or m-commerce fully launch in London on November 1997. Kelvin Duffey was elected as the Executive Chairman in the first meeting. Over 100 companies joined the global mobile commerce forum. Helsinki is the city in Finland that hosted the first m-commerce in using to pay Coca cola vending machines. Customers can use the mobile SMS text messages function paying their bills. In the same year, the mobile banking service could be used by SMS text messages in Merita Bank in Finland.

After the Finnish company and bank had a successfully experience in m-commerce. The other countries started to follow the trend, the m-commerce went to global market. There are two commercial platforms for mobile were set up in 1999. Philippines and Japan banks started using the m-commerce to complete their funds transaction. They are calling the Smart Money and I- Mode respectively. M-commerce had non-stopped developing after the year of 1997. At the year 2000, buy parking tickets from the mobile is another greatness invention that had been found in Norwegia, America. Moreover, Austrians can buy train tickets and Japanese even can buy plane through phone since 1999.

Once we cannot imagine is that the number of people who using phone to pay their products and services had been increased to 9 million mobile that subscribed in United States kin the year of 2008. However, we can say m-commerce still in the stage of introduction because it just covers 3.6% of all the mobile users. After the development of m-commerce had been steady in used people are more confident of it. In 2011 year, there is 173% increase in m-commerce subscribers that comparison to the previous year.

Fig. 1. The Future of M-Commerce

1971- Modern-day mobile-phone system set in place by AT&T, the first company to divide cities into "cells".

1973- The first personal handset is invented by Dr. Martin Cooper. The first portable mobile-phone was called the Motorola Dyna-Tac.

1974- The Federal Communications Commission (FCC) tries to have cell phone companies take the next step in cellular ideas. Unfortunately, terminal and network phone systems cannot be manufactured together this is to prevent monopolies from forming.

1975- AT&T forms its own cellular plan in Chicago. FCC has doubts about the success of this new plan.

1977- Cell phone testing is permitted in Chicago by the FCC. The Bell Telephone Company receives the license for the cellular plan and they partner up with AT&T.

1981- FCC forms strict rules on manufacturing in the cell phone industry. Western Electric gets the permission to manufacture both cellular and terminal products.

1988- The Cellular Technology Industry Association is established. This association created TDMA phone technology, a highly evolved cell phone.

2001- BellSouth leaves the pay phone business due to the competition from cell phones.

2002- Mobile broadband is a substitute to fixed-line technologies. HSPA, High Speed Packet Access, use shared-channel transmission strategies. HSPA still has to work our problems in its long round-trip packet.

2008- A breakthrough in long-term evolution. Even though this technology is advanced it still cannot comply with a 4G network, it is considered a 3.9G technology.

2011- Finally, the first 4G mobile technology that has long-term evolution is in the finalizing process.

Fig. 2. The Rapid Rise of M-Commerce

III. PRODUCTS AND SERVICES AVAILABLE

A. Mobile Money Transfer
In Kenya money transfer is mainly done through the use of mobile phones. This was an initiative of a multimillion shillings company in Kenya named Safaricom. Currently, the companies involved are Safaricom and Airtel. Mobile money transfer services in Kenya are now provided by the two companies under the names M-PESA and Airtel Money respectively.

B. Mobile ATM
With the introduction of mobile money services for the unbanked, operators are now looking for efficient ways to roll out and manage distribution networks that can support cash-in and cash-out. Unlike traditional ATM, sicap Mobile ATM have been specially engineered to connect to mobile money platforms and provide bank grade ATM quality. In Hungary, Vodafone allows cash or bank card payments of monthly phone bills.[11] The Hungarian market is one where direct debits are not standard practice, so the facility eases the burden of queuing for the postpaid half of Vodafone's subscriber base in Hungary.

C. Mobile ticketing
Tickets can be sent to mobile phones using a variety of technologies. Users are then able to use their tickets immediately, by presenting their mobile phone at the ticket check as a digital boarding pass. Most number of users are now moving towards this technology. Best example would be IRCTC where ticket comes as SMS to users.

D. Mobile vouchers, coupons and loyalty cards
Mobile ticketing technology can also be used for the distribution of vouchers, coupons, and loyalty cards. These items are represented by a virtual token that is sent to the mobile phone. A customer presenting a mobile phone with one of these tokens at the point of sale receives the same benefits as if they had the traditional token. Stores may send coupons to customers using location-based services to determine when the customer is nearby.

E. Content purchase and delivery
Currently, mobile content purchase and delivery mainly consists of the sale of ring-tones, wallpapers, and games for mobile phones. The convergence of mobile phones, portable audio players, and video players into a single device is increasing the purchase and delivery of full-length music tracks and video. The download speeds available with 4G networks make it possible to buy a movie on a mobile device in a couple of seconds.
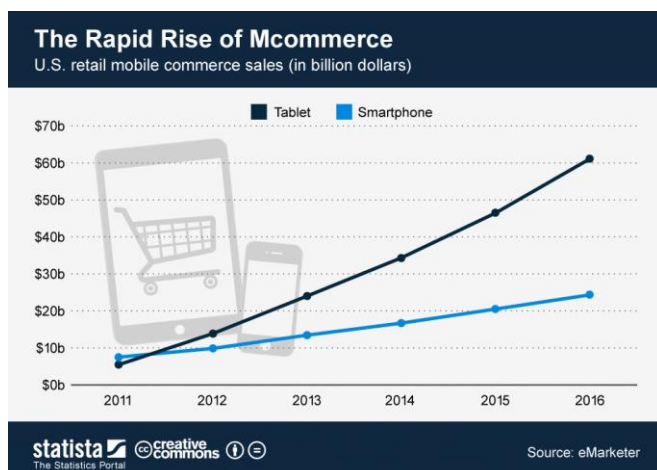
F. *Location-based services*
The location of the mobile phone user is an important piece of information used during mobile commerce or m-commerce transactions. Knowing the location of the user allows for location-based services such as:

- Local discount offers
- Local weather
- Tracking and monitoring of people

G. *Information services*

A wide variety of information services can be delivered to mobile phone users in much the same way as it is delivered to PCs. These services include:
- News
- Stock quotes
- Sports scores
- Financial records
- Traffic reporting
- Emergency Alerts

Customized traffic information, based on a user's actual travel patterns, can be sent to a mobile device. This customized data is more useful than a generic traffic-report broadcast, but was impractical before the invention of modern mobile devices due to the bandwidth requirements.

H. *Mobile Banking*
Banks and other financial institutions use mobile commerce to allow their customers to access account information and make transactions, such as purchasing stocks, remitting money. This service is often referred to as Mobile Banking, or M-Banking.

I. *Mobile brokerage*
Stock market services offered via mobile devices have also become more popular and are known as Mobile Brokerage. They allow the subscriber to react to market developments in a timely fashion and irrespective of their physical location.

J. *Auctions*
Over the past three years [when?] mobile reverse auction solutions have grown in popularity.[by whom?] Unlike traditional auctions, the reverse auction (or low-bid auction) bills the consumer's phone each time they place a bid. Many mobile SMS commerce solutions rely on a one-time purchase or one-time subscription; however, reverse auctions offer a high return for the mobile vendor as they require the consumer to make multiple transactions over a long period of time.

K. *Mobile browsing*
Using a mobile browser—a World Wide Web browser on a mobile device—customers can shop online without having to be at their personal computer. Many mobile marketing apps with geo-

location capability are now delivering user-specific marketing messages to the right person at the right time.

L. *Mobile purchase*
Catalog merchants can accept orders from customers electronically, via the customer's mobile device. In some cases, the merchant may even deliver the catalog electronically, rather than mailing a paper catalog to the customer. Consumers making mobile purchases can also receive value-add up selling services and offers. Some merchants provide mobile web sites that are customized for the smaller screen and limited user interface of a mobile device.

M. *In-application mobile phone payments*
Payments can be made directly inside of an application running on a popular Smartphone operating system, such as Google Android. Analyst firm Gartner expects in-application purchases to drive 41 percent of app store (also referred to as mobile software distribution platforms) revenue in 2016. In-app purchases can be used to buy virtual goods, new and other mobile content and is ultimately billed by mobile carriers rather than the app stores themselves. Ericsson's IPX mobile commerce system is used by 120 mobile carriers to offer payment options such as try-before-you-buy, rentals and subscriptions.

N. *Mobile marketing and advertising*
In the context of mobile commerce, mobile marketing refers to marketing sent to mobile devices. Companies have reported that they see better response from mobile marketing campaigns than from traditional campaigns. The primary reason for this is the instant nature of customer decision-making that mobile apps and websites enable. The consumer can receive a marketing message or discount coupon and, within a few seconds, make a decision to buy and go on to complete the sale - without disrupting their current real-world activity.

For example, a busy mom tending to her household chores with a baby in her arm could receive a marketing message on her mobile about baby products from a local store. She can and within a few clicks, place an order for her supplies without having to plan ahead for it. No more need to reach for her purse and hunt for credit cards, no need to log into her laptop and try to recall the web address of the store she visited last week, and surely no need to find a babysitter to cover for her while she runs to the local store.

Research demonstrates that consumers of mobile and wire line markets represent two distinct groups who are driven by different values and behaviors, and who exhibit dissimilar psychographic and demographic profiles. What aspects truly distinguish

Special Issue - 2015

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
NSRCL-2015 Conference Proceedings

between a traditional online shopper from home and a mobile on-the-go shopper? Research shows that how individuals relate to four situational dimensions- place, time, social context and control determine to what extent they are ubiquitous or situated as consumers. These factors are important in triggering m-commerce from e-commerce. As a result, successful mobile commerce requires the development of marketing campaigns targeted to these particular dimensions and according user segments.

Fig. 3. M-Commerce Applications

IV. CHALLENGES

- **Small screens** of most devices still limit types of file and data transfer (i.e. streaming videos, etc.)
- **Standards** guiding applications and technology development and connection(s) still work-in-progress
- **Less functionality** for mobile internet over mobile phones and existing generation of handhelds
- **User interface** is often difficult to learn how to use
- **Technology constraints** of mobile devices (memory, processing power, display capabilities, input methods)
- **Security** of data moved across some mobile and wireless networks is a big concern for many consumers.
- **Connectivity:** mobile commerce needs high speed connectivity. Otherwise it is become hectic for user to go through entire product purchase process.

V. CONCLUSION

As m-commerce applications and wireless devices are evolving rapidly, one will take forward the other one towards empowering innovation, versatility and power in them. There are a number of business opportunities and grand challenges of bringing forth viable and robust wireless technologies ahead for fully realizing the enormous strength of m-commerce in this Internet era and thereby meeting both the basic requirements and advanced expectations of mobile users and providers.

There are news articles and pictures displaying people, who are ordering things over the Internet while waiting for a bus, downloading merchant coupons on their PDAs as they enter a store or bidding for the last table at a hot restaurant by digital phone in a spur-of-the-moment auction. Actually this process represents a tip of a very big iceberg. The advent of m-commerce, as widely referred to among the users, has far-reaching implications. But there are many limitations in the technologies that Once its relevant technologies get matured, widely available and competent, the host of portable devices will be ready to handle the bigger transactional activities not envisioned so far successfully apart from these minor activities.

ACKNOWLEDGMENT

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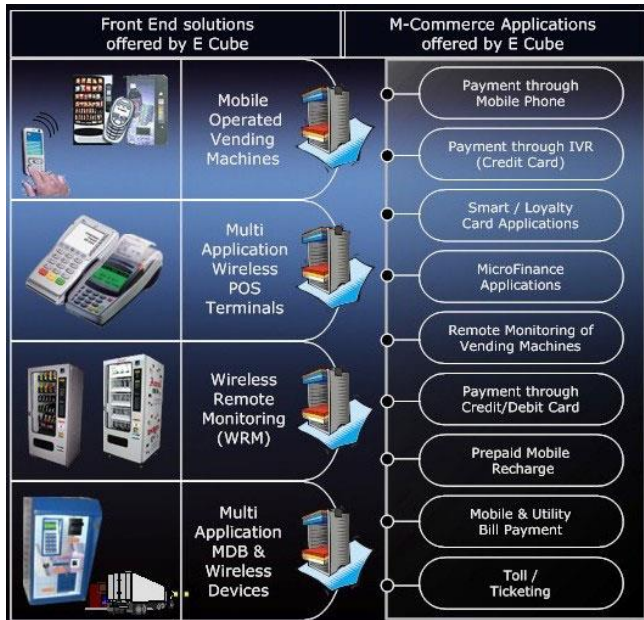[6] Article: The Future of M-Commerce - Ahmed Banafa - https://www.linkedin.com/pulse/20140608020615-246665791-the-future-of-m-commerce