An Inclusive Framework of Mobile Commerce

Dr. Sanjay Tejasvee
Assistant Professor, Dept. of Computer Applications
Govt. Engineering College Bikaner
Bikaner (Raj.) - India
drsanjaytejasvee@gmail.com

Abstract— The increase of the sustainability and power of wireless deals presents a proper opportunity for rising up services to customers. The main objective of this paper is to develop a systematic literature review for the discovery about mobile commerce phenomenon with the discussion of how mobile commerce accomplishes transactions over the mobile device through the global internet networks and what kind of benefits and limitations while dealing with the mobile commerce transactions. This paper also summarizes the development and the future guidelines towards mobile commerce research.

Key words— Sustainability, Wireless, Systematic, Literature, Phenomenon, Mobile Device and Networks

I. INTRODUCTION

The Internet and all kind of telecommunications have been gradually more common in many daily life aspects since the 1990s. In 2005, there were about 964 million Internet users and 2,168 million mobile phone users globally (Internet Telecommunication Union (2007). [1] [2] [3]

Mobile Commerce is the use of mobile to communicate, inform transact and entertain using text and data via a connection to public and private networks with monetary value that is conducted via a telecommunication network. [4] [5]

The working definition of Mobile Commerce for the purposes is any transaction with a monetary value that is conducted via a mobile telecommunications network. In this report, we refer to Mobile Commerce as M-Commerce, Mobile Electronic Commerce or Wireless Electronic Commerce, using these terms interchangeably. [10]

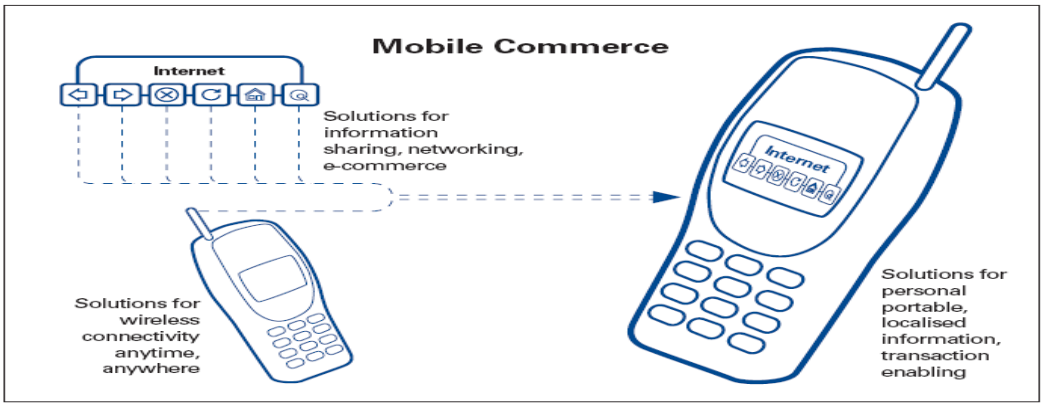

Figure 1. Mobile-Commerce

M-commerce is a new term which becomes an instantaneous knock and is also being known as the next generation of e-commerce. In M-commerce users carry out financial transaction using their mobile phones and does not always need of Internet. It is has made the process of purchasing and selling products or services even easier due to WAP (Wireless Application Protocol) technology which allows users to connect to the internet without dealing with the bother about wires and electricity. [6]

Actually M-Commerce contributes the potential to deliver most of what the internet can offer, plus the advantage of mobility. M-Commerce gives mobile communication devices as mobile phones and personal digital assistants (PDA) the ability to pay for goods and services.

II. E-COMMERCE V/S MOBILE COMMERCE

The mobile commerce (m-commerce) marketplace is growing and new products and services are constantly becoming available. Smartphone technology is one important factor driving growth. This is because as phone software becomes more sophisticated, m-commerce transactions are faster and easier to engage in.

Basically the M-Commerce is represented as a subset of e-commerce. M-Commerce should be recognized as a unique business opportunity with its own unique features and operations. M-commerce is not just about an extension of an organization based on internet channel. There are more similarities between e-commerce and m-commerce but some difference also exist which are describing in following table.

TABLE I. E-COMMERCE V/S M-COMMERCE

S. No.	Aspects	E-Commerce	M-Commerce
1.	Device	Personal Computer.	Smartphone, Pagers and PDA's.
2.	Operating System	Windows, Linux and Unix.	PocketPC, PalmOS, Proprietary Platforms.
3.	Browser	Netscape and Microsoft Internet Explorer.	MS Mobile Explorer and Other micro-browsers.
4.	Standard Presentation	HTML	HTML, WML, HDML and i-Mode.
5.	Bearer Networks	TCP/IP and Fixed Wire-line Internet	GSM, GSM/GPRS, TDMA, CDMA, CDPD paging networks.
6.	Reaching Probability	Compare to E-commerce it allows business to reach consumer little slower.	It allows business to reach consumer faster.

Promotional messages, downloading movie tickets, airline tickets on the phone with the constant upgrade in cellular technology are popular examples of M-commerce. Mobile applications, online banking and online shopping via phone are also different forms of M-commerce. M-commerce however is costly compared to E-commerce but it is wider as it requires the use of a computer and internet connection, while mobiles work on satellites. Video conferencing is now available on mobile phones with 3G and 4G networks, without the hassle of internet.

III. POURING FACTORS TOWARDS M-COMMERCE

The key reasons behind the rapid growth of M-Commerce are as following:

- M-commerce can improve and widen their market reach, cut down on cost and give customers better service.
- Exponential growth of consumer interest and adoption of the internet and e-commerce.
- The evolution of the handheld devices incorporating WAP and now GPRS is another key reason behind the development to M-Commerce.
- The Development of real-time transfer of data over 3 G networks will enable faster data transfer and anytime connectivity.
- Mobile device compactness for convenience and personalized functions, subsequently, people have become quite attached to their devices. Mobile device is easy to carry by user, It helps to avoid user to go physically to any particular shop as well as it also helps to user for avoid once of use of computer or laptops etc.
- High value purchases such as land, houses and cars will be more convenient in the future.
- Due to user friendly feature of M-Commerce consumers feel good to find more easily and rapidly for a particular product with different classification of products variety and choose more exclusively product.
- M-commerce is also efficiently used where the internet connectivity is less and website is taking more time to upload or hit. Through mobile devices less internet data will be used, so it is also economical with comparison of using internet via computer devices
- M-commerce also gives an assurance of secure transactions, for the transaction, confirmation code is sent on the e-mail and mobile phone. And after filling this code the transaction will be processed, So that chances of wrong transactions are very less and unsecure transitions can be eliminated.

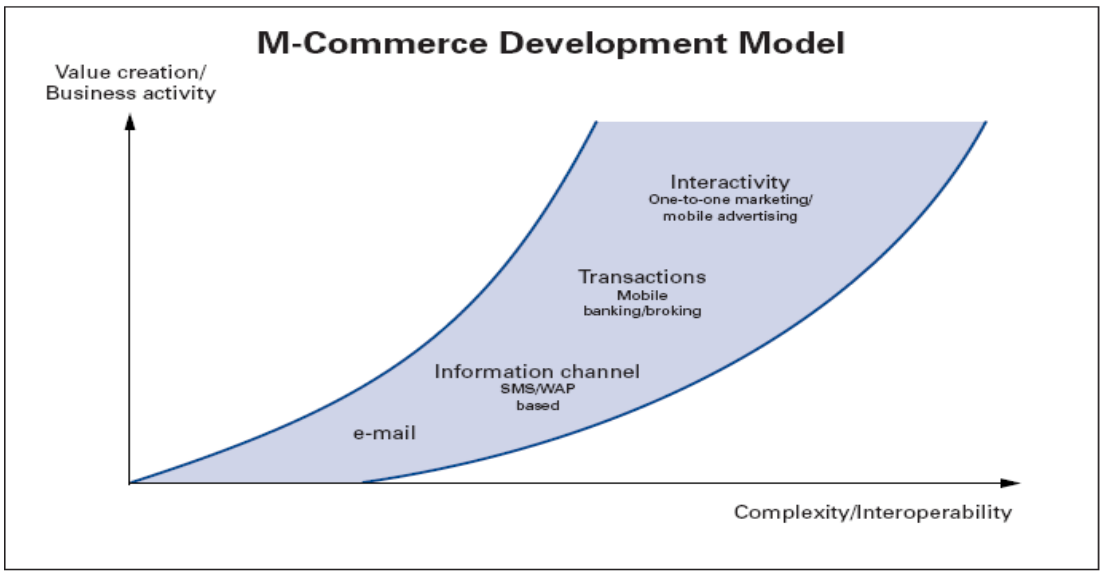

Figure 2. M-Commerce Development Model [9]

IV. LIMITING FACTORS TOWARDS M-COMMERCE

There are following three main limiting factors such as:

1) *Lack of standards:* with a host of device operating systems and platforms, middleware are solutions and networks, make application development for the wireless internet a difficult task, versus the level operating environment of the wired web.
2) *Device Constraints:* Proper device is necessary to implement M-Commerce but still devices have their limitations like:
    a) *Weak processors.*
    b) *Limited memory*
    c) *Poor resolutions and Tiny screens*
    d) *Poor data entry.*
3) *The Wireless Local Area Network, which is known as (WLAN), operates in the unlicensed 2.4GHz, and most mobile phones have this function and it is also becoming very popular [14]. However during the default mode WLAN is not secured which makes the device easy to corrupt, so a certain level of security was needed and that is why the IEEE invented WEP (Wired Equivalent Privacy) in order to solve the following problems:*
    a. *Authentication to protect the association to an AP.*
    b. *Integrity protection to MAC frames.*
    c. *Confidentiality to MAC frames [11] [12] [13].*

V. APPLICATIONS OF M-COMMERCE

While electronic commerce continues to see phenomenal growth, mobile commerce is still in its infancy. However, as wireless network grows, it is expected that emerging wireless and mobile networks will provide new avenues for growth in mobile commerce, create new business models for mobile operators and offer new applications to business and consumers [15][16]

As per the researchers, there is a lot of uncertainty about optimal application of mobile commerce, so researchers classified applications of M-Commerce into three categories which are showing in the figure 3.

1) *Goods:* There can be two types of domain like business-to-business and business to consumer.
2) *Services:* Services can customer to business.
3) *Information:* Information service can be paid to customers or to others companies.

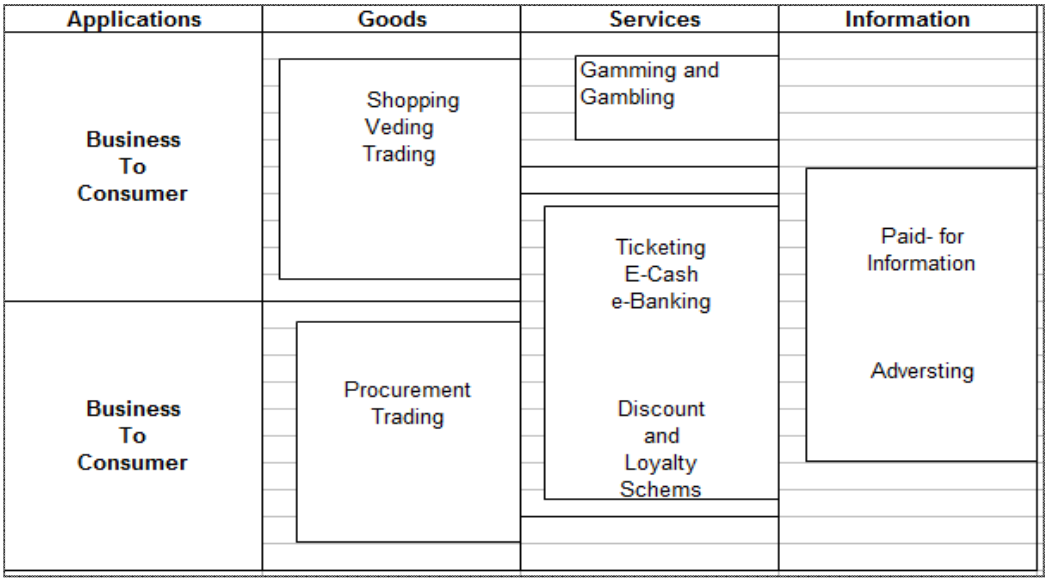

Figure 3. M-Commerce Applications

VI. DESIGN AND DEVELOPMENT METHODOLOGY FOR M-COMMERCE SERVICES

Here, we will suggest a new methodology for design and develop m-Commerce services and applications. The m-Commerce services and applications analysis and design can be incorporated in a modified Web engineering (WebE) process [17]. This modified WebE process includes six phases:

1) Formulation (Defines the tasks and goals)
2) Planning (Estimates the project cost, risks and sets a timeframe)
3) Analysis (Identifies all the mobile user requirements)
4) Engineering (Content design, Production, Architectural, Navigation, and Interface)
5) Service Implementation and Testing (creation of the m-Commerce service and application)
6) User Evaluation (Evaluates each task and proposes new modifications and expansions

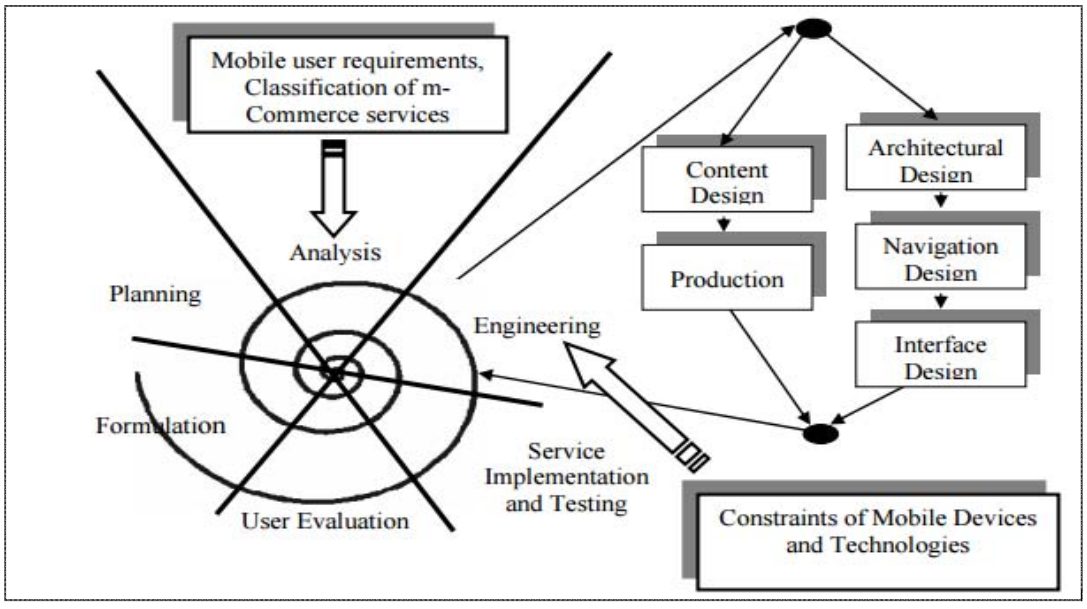

Figure 4.The Modified Web Eprocess for M-Commerce Services and Applications

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AUTHOR

Dr. Sanjay Tejavee is working as an Assistant Professor in Govt. Engineering College Bikaner (Raj.) He has completed his doctorate in computer science in 2013 and cleared UGC-NET in 2012. He has done his MCA from University of Rajasthan (University Campus), Jaipur (Raj.) in 2004. He has huge interest in digitalization and implantation of integrated models or architectures to deliver government services to the modern society. His current area of research is implementation of integrated e-Governance and service oriented digitalization via integration of several things to provide better and effective solution to deliverance of Government's services.