

## **BLACK BOX OF MOBILE COMMERCE SERVICES**

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### **Abstract**

*Mobile commerce services and application has started in a new and unique way in the world. United States has more computers then their populations while in Europe and Asia has more mobile phone which started Mobile commerce in a unique way. It shows a unique behavior that in one part of the world progress in computer production and uses computer technology in a routine work. It is also trying to implement computer in their services while the other part of the world is trying to the usage of the mobile phones and all their population is trying to get benefit from mobile. United States is far behind in mobile phones then Asia. But both are trying to get maximum benefits from technology and make their lives simple and convenient. Mobile phones are growing very rapidly. It is predicted that global mobile market will grow from 18.5 percent in 2004 to 616.4 million. It is a hugest jump in the mobile market that showed the adoption of new technology. This is the largest segment of the market, accounting for 564.6 million units in 2008 or 74 percent of all sales.*

**Key Words:** *Mobile Commerce, Personal Interaction, Mobile Shopping, Dynamic Information Management, Mobile Advertising.*

### **Introduction**

M-Commerce is the abbreviation of Mobile commerce. It consists of two different words one is mobile and other is commerce. It is the type of commerce which is done by using any mobile device like mobile phone, a smart phone or a Personal Digital Assistant (PDA). According to Wikipedia it is transaction of any product or service which is delivered from one party to another party by using mobile phone or any other electronic device. M-Commerce defined by (Angsana, 2002) all electronic transactions that use wireless devices connected to LAN or WAN for enabling data.

M-Commerce can be person to person (P2P), business to business (B2B) or it can be business to customer (B2C). M-Commerce is the subset of E-Commerce. M-Commerce first time done by in 1997 in Finland by Coca Cola and Merita Bank of Finland through SMS service. 1998 first ring tone

sale is occurred in Finland. M-Commerce services like mobile payment and ticketing spread very quickly in Norway, Australia and Japan in 2000. Eight major M-Commerce services are M-Commerce, M-Shopping, Dynamics Information management, Entertainment, Information Services, M-Advertising, M-Security & Emergency at the end Personal Interaction services. All these eight mediators play an important role in the M-Commerce services.

These mediators make effect on M-Commerce services. They all have some independent variables those make effect on mediators and these mediators make an effect on over all M-Commerce services. M-Commerce has three major independent variables these are Banking, Brokerage and payment. Second mediator is M-Shopping contains four independent variable i.e. Auction, Reservation, Ticketing and Retailing. Third mediator is Dynamics Information management have three independent variables i.e. Medical Record, M-Membership and loyalty Program.

Fourth mediator is Entertainment. It have three independent variable i.e. Games, Music and videos. Fifth mediator is Information services it have four mediators i.e. news, directions, maps & location and other information. Sixth mediator is M-Advertising it have three independent variables i.e. coupons, one to one marketing and promotions. Seventh mediator is M-Security & emergency and it contains three independent variables i.e. health tracking, personal security and emergency. Eight and last mediator of my study is personal interaction that have five independent variables i.e. Phone calls, E-Mail, chat rooms, messages and data transfer.

The problem statement of this study is to analyze the effect of mobile commerce services and its application in customer's all aspects of life. It will also check how much valuable these services to the customers. There are four major research questions of this study. Question no 1: What is the focused group of mobile commerce? Question no 2: Is mobile commerce services are valuable for customers? Question no 3: Why mobile commerce services are growing rapidly? Question no 4: Will mobile commerce increase the overall market for Internet commerce? M-Commerce services are quickly and booming subject.

In 2004 about 15 to 20 million customers using m-banking or m-financing due to user convenience, low operational costs and response to the mobile operators (Norman Sadeh, Page no 168). M-Commerce is to examined market and the customer's attitudes having different demographic characteristics (Suleyman Barutcu, Vol.9/10, 29-56). Main objectives are (a) to find out the m-commerce awareness (b) create the m-commerce environment. (c) Behavior and satisfaction of people about m-commerce (d) find the convenient path of services (e) minimizing the cost.

It is also creates, Awareness about Mobile commerce is a new technological way of commerce which produces maximum results. (Jillbert and Ahmad, 2003) try to make knowledge and awareness about m-commerce services as a factors affecting on the adoption of mobile commerce services by their study. Hong Kong is the top one country which is doing mobile commerce about 80% and it is the highest rate in the world (Leung Chan and Chan 2003). M-Commerce has introduced some unique and new services like the payment of utility bills, news, Chat corner and money transaction.

These are new services which is not offered such a great convenient mobility way. M-Commerce is also save the time. Most of our work and commerce will be done at mobile and we did not need to do by a formal way which can save our time. Like to pay any payment on mobile and did not need to visit the bank that's why it will save our time. M-commerce is introducing us to instant gratification anywhere (Peters 2002). One of the most important factors to adopt the mobile commerce is the cost and price reduction.

By using mobile phones too much high prices of the things has become lower in all over the world especially in Swedish (Heinonen, 2002) M-Commerce has many advantages like it will save time, make life easy, cost reducing by using new technology and many others factors are influencing on customers (Haque, 2004). M-Commerce makes the customers so satisfied and makes them loyal because it is the new technology which is 24 hour, 7days a week which can connect the customers and the company in a easy, convenient and cost reductive way.

Customer can purchase any product or service from all over the world and can also give feed back about it. That's why this new technology make the customers satisfied and loyal. M-Commerce makes the customer's life more convenient. That's why people adopt it very quickly. Because people adopts only those technologies which makes their life convenient (Hossain and Prybutok, 2008). M-commerce make the life so simple and convenience, efficient like stationary machine to perform any transaction (Tang and Veijalainen, 2001). M-commerce make the transactions convenience, localized, personalized and ubiquity (Clarke, 2001).

This is study is the small part of a research but it has a vital role in mobile commerce services and its applications. It is significant for both managers/ organizations to see the effect of mobile commerce services on their customers and make strategies for them. It is also important for researcher/ academia to get a new part of study for further research. It has a significant effect on the behavior of people and in some area's it will make awareness about new technology usage of mobile commerce and its applications in their life. It will also encourage people to adopt this new technology to make their life simple and easy.

### **Literature Review**

Mobile commerce services and application has started in a new and unique way in the world. United States has more computers then their populations while in Europe and Asia has more mobile phone which started Mobile commerce in a unique way (Haque, 2004). It shows a unique behavior that in one part of the world progress in computer production and uses computer technology in a routine work. It is also trying to implement computer in their services while the other part of the world is trying to the usage of the mobile phones and all their population is trying to get benefit from mobile.

United States is far behind in mobile phones then Asia. But both are trying to get maximum benefits from technology and make their lives simple and convenient. Mobile phones are growing very rapidly according to Gartner Dataquest it is predicted that global mobile market will grow from 18.5 percent in 2004 to 616.4 million. It is a hugest jump in the mobile market that showed the adoption of new technology. This is the largest segment of the market, accounting for 564.6 million units in 2008 or 74 percent of all sales.

By this figure it is estimated that 74% of all sale will be done by mobile phones and it will be continue in all the emerging markets like Middle East, Asia and Africa. Unit sale compounded annual growth rate (CAGA) is 16.2 percent between 2004 and 2008 in Africa (Gartner Dataquest 2004). This growth rate is showing that the unit sales are increasing such area's like Africa is a biggest achievement of this new technology of mobile phone. It is due to the convenience of purchase and the other is the saving of time.

Mobile commerce services provided from business to customers are divided in to three main categories which will be further divided in to different their applications. The main three categories are (1) commerce (2) intermediate (3) informative Leem et al, (2004). So these are the three main components which is based the mobile commerce and further researches also agree with these three categories and it is divided in to their different applications.

Funk (2005) investigates these categories and he did divide mobile commerce applications in to seven categories. These are (1) mobile shopping (2) mobile ticketing (3) mobile marketing (4) mobile internet (5) multi- media mail (6) navigation (7) portable entertainment player. All these seven categories of mobile commerce services are playing very important role.

These Mobile commerce services and its applications are less or more divided by their need to the situation. These will vary from situation to situation and study to study by researchers. But most of the researchers are agree with each other. Internet or web application is a back bone service of the mobile commerce services and we can know about weather and sports updates by this service at any time and any place.(Ghosh and Swaminatha 2001).

Only using the mobile internet services we can perform many other applications. Kannan *et al.* (2001) says that M-commerce is also plays important role in different marketing in area's like bookings, banking, travel, auctions, dynamic transactions, stock trading and games etc with or with out using mobile internet services (cf. Müller-Versee 2000; Urbaczewski *et al.* 2002). M-commerce is growing and adopted very rapidly due to pricing, quality of services and minimizing the costs (Rao, 2002).

In this competitive world companies are trying to satisfy their customers by providing their highest quality products or services at the minimum prices with in seconds at customers door step. So Mobile commerce services are very quick in time and it will be operates with in seconds. That's why it is called killer applications and they have some characteristics like time critical, location based, secure and highly personalized (Ali Grami and Bernadette H. Schell, University of Ontario Institute of Technology).

Some more mobile services and its applications are categorized by Ali Grami are Entertainment Services, E-Tailing Services, Social Services, Directory Services, Monitoring Services, Micropayment Services, Financial Services, Access Services, Portal Services, Security Services, Information Services, Emergency Services, Distribution Services. The study of (Ali Grami and Bernadette H. Schell, University of Ontario Institute of Technology) cover a lot of mobile commerce services which are accepted by other researcher in their own way.

In the same way (Ranjish Tiwari, chapter no 5, Page.63) explains the major mobile commerce applications and its services are Mobile Banking, Mobile Entertainment, Mobile Information Services, Mobile Marketing and Mobile Shopping. By the both researcher and (Schnicke, 2002) and (Cornelius Herstatt, 2006) are also explained mobile commerce applications and services as Mobile banking Mobile entertainment, Mobile information services, Mobile marketing, Mobile shopping, Mobile ticketing, Telematics services. This will be continue and provided services by Mobilink like ticketing, shopping, payment, entertainment and purchasing (Mobilink Genie pioneers, 2008).

I watched clips on you tube. By doing this depth study of literature review I will concluded and make a study model by taking eight major pillars of mobile commerce services are (1) Mobile Commerce (2) Mobile Shopping (3) Dynamic information management (4) Entertainment (5) Information services (6) Mobile Advertising (7) Mobile security and Emergency (8) Personal Interaction. All these services have some independent variables which are also discussed and also checked the effects of these independent variable on their services and then these services are related and check the impact on the overall mobile commerce services.

### **Mobile Commerce**

M-Commerce is the abbreviation of mobile commerce. It is divided in to thee main types (1) Purchase of Physical goods (2) Purchase of services (3) Information delivery such as stock market information (Leung, Chan and Chan, 2003). According to this research held on Hong Kong. I

divided M-Commerce in three independent variables i.e.(1) Payment for physical goods (2) banking for services (3) Brokerage for information or stock exchange information. M-payment is used mobile phone for payment instead of cash (Wikipedia).

According to Cornelius Herstatt (2006) Mobile banking is the m-commerce application which makes all bank related transactions e.g. account status, money transfer and payment through mobile is possible from any time and any place.

Buying any product will make it easy and it is possible to buy from internet using mobile internet services at different web sites. And the payment will be done through the mobile phone and order are also given and feed back will also given by using mobile phone.

Mobile brokerage is also an important application of m-commerce and it deals with the purchasing and selling of the stocks or the shares at stock markets of all over the world. Reading literature and researches, it is cleared that Payment, Brokerage and Banking are effecting as independent variables on Mobile Commerce. It makes a strong relationship with each other and also effect on overall of my study.

### **Mobile Shopping**

M-Shopping is the abbreviation of mobile shopping. It is the type of shopping which is done by using mobile phones. It is the easy, time saving and convenient way of shopping with out going to any shopping store. Only mobile user connects the mobile through internet and then they can purchase what they want easily at an economical price (Suleyman Barutcu, Vol.9/10, 29-56).

User can purchase a standardized daily usage product choosing from mobile phone catalogue and then completing transaction through mobile phone (Cornelius Herstatt, 2006 & Rajnish Tiwari, 2008). It is the one form of retailing. I have divided m-shopping services in to four main application or four independent variables i.e. retailing, ticketing, reservation and auction.

Any service that is paid before utilization by law for the entry at any place is called ticketing and on mobile we get this ticket is in a digital form (Cornelius Herstatt, 2006). Mobile reservation and ticketing is done electronically. We can purchase and book any ticket for any event. We can purchase any product and can also reserve. We can pay it on get receipt from mobile devices.

Other tickets like sporting, theaters, railways, airlines, parks and so on. Tickets can be reserved or purchased (Hsieh, 2007). Auction is the sale of any product or service done for public. It is the special form of selling and it is now dealing at the mobile phones due to globalization and new technological trends. Reading literature and researches, it is cleared that Retailing, Ticketing, Reservation and Auction are effecting as independent variables on Mobile Shopping. It makes a strong relationship with each other and also effect on overall of my study.

### **Dynamic Information management**

Dynamic information management is the other mobile commerce service. Dynamic information is the type of information which is most vibrantly used and it is required and processed again and again. This type of information is must be managed by using different techniques and it can be using an advanced technology like mobile and can be available at any time and at any place for use. It consists of three major independent variables i.e. loyalty programs, mobile memberships and medical records.

Loyalty programs of customers or members is dependent on different factors like low or coupon prices and some times discounts at special events for special products e.g. temporary low prices of restaurants at slow nights. It is the form of dynamic prices (Funk 2005). Some other factors are also influencing on the dynamic information services for merchants to manage daily store hours,

update brands and catalogue, daily and special discounts, direction guidance, parking suggestions and customer's location and personal data should be managed.

That will be dynamic information which can help the merchant to offer shopping membership cards like at pizza clubs or at different shopping centers to make their customer to visit frequent and make them loyal (Suleyman Barutcu, Vol.9/10, 29-56). In the mobile membership the profile, location, position, identity and access time of user or member who entered in the store is recorded and it is helpful for retailer to make their members to satisfied and loyal (Liang et al. 2004).

Medical record of the customer is also kept in same way when the patient inter into the hospital the every time moment will be checked and record, what is the condition of patient, how it is treated, those medicines are recommended and what is the effect of treatment on the patient. All these information is managed for the further actions. Reading literature and researches, it is cleared that Medical record, Mobile membership and loyalty programs are effecting as independent variables on Dynamic information management. It makes a strong relationship with each other and also effect on overall of my study.

### **Entertainment**

Entertainment is the other mobile commerce service that provides the data in digital form for entertainment e.g. ringtones, games and videos (Cornelius Herstatt, 2006 & Rajnish Tiwari, 2008). Entertainment is the most attractive mobile commerce service and it is electronic contract with user to pay for game, ringtone, video or any gambling. It may be paid direct or with user mobile bill for each game (Hsieh, 2007). I have categorized mobile entertainment in to three major categories i.e. video, music and gaming.

Most of the people like this mobile commerce service and it has many applications like watch television, videos, music and games. (Suleyman Barutcu, Vol.9/10, 29-56). Reading literature and researches, it is cleared that Video, Music and Gaming are effecting as independent variables on Entertainment. It makes a strong relationship with each other and also effect on overall of my study.

### **Information services**

Information services are also important service of mobile commerce. This service are obtained only those customers who have subscribed. They get some massages which contains information e.g. news updates like sports, politics and weather etc other information may be deals like appointments, e-mails and reminders (Cornelius Herstatt, 2006 & Rajnish Tiwari, 2008). I have divided information services in to four major services i.e. news, directions, maps & location and other information.

Information services are also providing to be location base service which are delivered by mobile phones (Dholakia and Dholakia, 2004). This location base services are helpful for understanding of directions and also maps and locations are given on mobile phones for tourist and other people to find help about the direction, maps and locations any where around the world.

GSM helpful for find the location, companies want to know the location of their customer at any time for their planning (Barnes, 2003; Pura, 2005). Reading literature and researches, it is cleared that News, Directions, Maps and locations and other information are effecting as independent variables on Information services. It makes a strong relationship with each other and also effect on overall of my study.

### **Mobile Advertising**

M-Advertising is the abbreviation Mobile advertising. It is another mobile commerce service. Now a day's Short message services (SMS) are send from business to the customer to get information about their business and it is the form of direct marketing and it will improve business to customer relationship and also promotional activities (Frolick and Chen, 2004).

There are two different types of advertising strategies push and pull. And in push strategy is most of time is used in mobile advertisement and send only product related text messages (Suleyman Barutcu, Vol.9/10, 29-56). This push strategy will save time and money for searching and browsing for product (Quah and Lim, 2002). MMS are also used for visual advertising. SMS and MMS have greater response as compared to e-mail and television advertisement. M- Advertising has three main independent variables these are promotions, one to one marketing and coupons.

M-coupons have three advantages (1) handling at the point of sale (2) target base (3) time sensitivity efficient (Scharl et al. 2005). Coupons will immediately increase sales by giving some discounts to the customers. Mobile marketing is the type of one to one marketing because each customer has his own mobile phone that connect the customer to the business and it will also build positive brand image, increase sale by getting new customers and the making loyal to old ones.

It is also simple and inexpensive media channel to advertise (Rajnish Tiwari, 2008). Mobile services are also check the access time of the customers, their identity and their profile for their facilitation (Liang et al. 2004). Location based data can be used for direct marketing (Casal et al., 2004).

Mobile sale promotion mix include any gift, sample, discount or any coupon that will result to increase sale immediately e.g. buy one get one free or give discount at slow nights on restaurants (Funk 2005). Reading literature and researches, it is cleared that Coupons, One to one marketing and Promotions are effecting as independent variables on Mobile advertising. It makes a strong relationship with each other and also effect on overall of my study.

### **Mobile Security and Emergency**

A lot of factors are influencing on the adoption of mobile phone like security, ease, comfort and price (Vrechopoukis et al., 2002). Security is the one of the major factor and it is an international issue. Mobile commerce services have its applications on m-security and emergency also. Security is the key that can be enabled from mobile phone.

First mobile security was introduced Sonera smartTrust, offered in 1999. A Public Key Infrastructure (PKI) for certificates and digital signature in mobiles. Public Key Infrastructure secured transactions with digital signature, strong encryption, verification through message and confidentially (Hsieh, 2007). M- Security also cares the personal security through PIN on mobile phones. It has also playing role in smart cards for transaction. It is varying from person to person (Whitepaper 2009).

These services are also found in a lot of emergency cases like 1122, 911 & enhanced 911, taxi, roadside, Security and surveillance of people (Ali Grami and Bernadette H. Schell, University of Ontario Institute of Technology). Reading literature and researches, it is cleared that Personal security, Emergency and health tracking are effecting as independent variables on Mobile security and Emergency. It makes a strong relationship with each other and also effect on overall of my study.

### **Personal Interaction**

It is the last mobile commerce service of my study. Personal interaction is the back bone of the innovation of mobile phone. First priority of our mobile commerce is to interact with each other it may be through call, messaging, chat or data transfer through blue tooth or wi-fi or infrared. Most of the professionals and business call to their customers and the first priority of the customers is also to e-mail or call to the company for order of any product or service or its feed back.

But for advertising or the informal interactions SMS are used 90% of time these messages are simple or any updating like sports or weather (Hsieh, 2007). Reading literature and researches, it is cleared that Phone calls, E-Mail, Chat rooms, Messages and Data Transfer are effecting as independent variables on Personal interaction. It makes a strong relationship with each other and also effect on overall of my study.

I divide my literature review in to two parts. In first part I have only took Mobile commerce services as dependent variables and all other variables as independent and check their effect on mobile commerce and then in the second part I took all independent variables as dependent variables and then take their independent variables and check the effect of these independent variables on individual dependent variables.

This is also possibility to take mobile commerce as dependent and other eight variables as intermediate variables or mediators and then these mediators have independent variable. Firstly check the effect of independent variables on mediators and then the effect of these mediators on the mobile commerce is also possible.

At the end of literature review it is concluded that Mobile commerce has spread its services and applications in almost every aspect of life. And all these eight independent variables (1) Mobile Commerce (2) Mobile Shopping (3) Dynamic information management (4) Entertainment (5) Information services (6) Mobile Advertising (7) Mobile security and Emergency (8) Personal Interaction. Make a strong effect on mobile commerce services and its applications.

### **Conclusion and Recommendations**

At the end of this study now this is the time to conclude and recommend about the study. It is concluded that mobile commerce is a very fast growing technology which have been captured all the fields of life and playing its fundamental role to facilitate its entire users in sense of quick response, easily availability, door step and less operational time and cost.

All data analysis results are in favor of mobile commerce services and prove that these services are valuable for customers in their busy life to get any work at their own mobile phone at any time and any place. Now a day no need to go for market for purchasing that's why it increases the market sizes as well as competition.

All hypotheses are proved in favor of mobile commerce services and its applications. Mobile commerce services are now found in all the fields of life and facilitating the customers. Companies and their executives are aware and using this technology to spread their business. Problem statement of this study is also satisfied. In the long run, mobile commerce will be the biggest market and most of the earring will be generated from it rather than all the other resources.

The conclusion of this study is also supported the other researchers. It is also recommended that create awareness in people who don't know about mobile commerce. From organization point of view they must use the mobile commerce services as the tool of marketing and also for the transaction. Mobile commerce will give them a lot of benefits such as increase profit, capture new customers, and loyal current customers. Feed back is also get from the customers through mobile phone. At the end mobile phone is an effective as well as efficient device to facilitate every one at every time on its door step.

### **Hypotheses for future studies**

This study based on three hypotheses.

H1: Customers need mobile commerce services.

H2: Mobile commerce services are valuable for customers.

H3: Mobile commerce increase the competition in overall market.

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