

# Mobile Commerce: A Business Perspective towards user Friendly Services

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## Abstract

As market potentials for web-based e-commerce is increasing rapidly. With the advancement in wireless technologies and mobile networks new business opportunity and research attentions are arising. Commonly, mobile commerce is considered to be another new application of existing web-based e-commerce onto wireless networks, but as an independent business area, mobile commerce has its own advantages and challenges as opposed to traditional e-commerce applications. This paper focuses on exploring the unique features of mobile commerce as compared with traditional e-commerce. Also, there are some limitations arisen in m-commerce in contrast to web-based e-commerce. Finally, current state of mobile commerce in India is presented in brief, with an introduction of several cases involving mobile commerce applications in today's marketplace. Current research on mobile commerce has focused on various aspects of commerce activities.

**Keywords:** *M-commerce, wireless technology, applications and services.*

## 1. Introduction

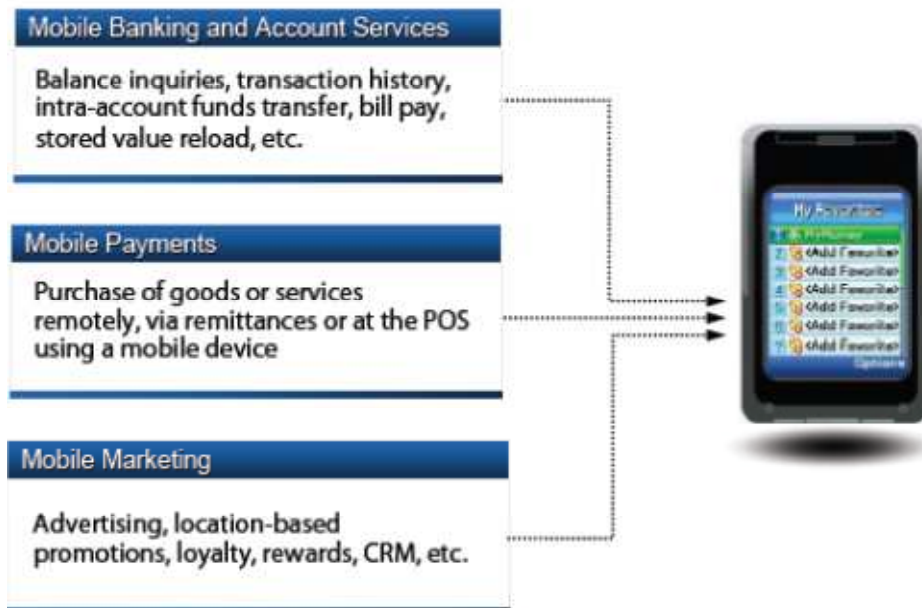
Mobile Commerce (also known as M-Commerce, m Commerce or U-Commerce, owing to the ubiquitous nature of its services) is the ability to conduct commerce, using a mobile device e.g. a mobile phone (cell phone), a PDA, a Smartphone and other emerging mobile equipment such as dash top mobile devices. Mobile Commerce has been defined as follows:

"Mobile Commerce is any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device.

From computerworld.com, "Mobile commerce is the use of radio-based wireless devices such as cell phones and personal digital assistants to conduct B2B or B2C transactions over wired, web-based e-commerce systems."

By utilizing mobile commerce the user is simply and at every place and times, able to access his/her own data. The main advantage of M-commerce comparing to E-commerce also exists in. In fact while the use of E-commerce is provided only when the user is at his/her own home or workplace or in any other location he/she has to access media such as, Internet, TV. M-commerce merely need the Mobile-phone. However this doesn't bear the meaning that M-commerce is limited to ordinary applications like reading E-mail or reporting.

Mobile Commerce has gained increasing acceptance amongst various sections society in last few years. The reasons for its growth can be traced back to technological and demographical developments that have influenced many aspects of the socio-cultural behavior in today's world. Mobile services have registered impressive growth in preceding years and m-commerce is slowly but showing its presence in various aspects:



## 2. Review of Literature

Mobile commerce, which is commonly referred to as m-commerce, has become an important concept in today's business environment (Rottenberg, et al. 2002). Mobile commerce involves the use of mobile computing devices in carrying out different types of economic transactions or enabling them to take place over space and time. The m-commerce includes use of such technologies as SMS1 services over a number of carriers (GSM2, IS953, CDMA4, W-CDMA5), Bluetooth applications, and the integration of low-level digital carriers to IP based services. This integration is one of the fastest growing markets of E-business and it will involve the development and design of a host of new applications, services, business models and technological solutions (Lyytinen, 2001). According to Malladi et al. (2002), mobile wireless technologies consist of two aspects—mobility and computing. They claimed that mobile computing represents users' continuous access to network resources without limitation of time and location. Wireless means that transmission of any form of data—text, voice, video or image—is conducted through radio waves, infrared waves or microwaves rather than using wires (Dubendorf, 2003).

Therefore, mobile wireless technologies is defined as any wireless technology that uses radio frequency spectrum in any band to facilitate transmission of text

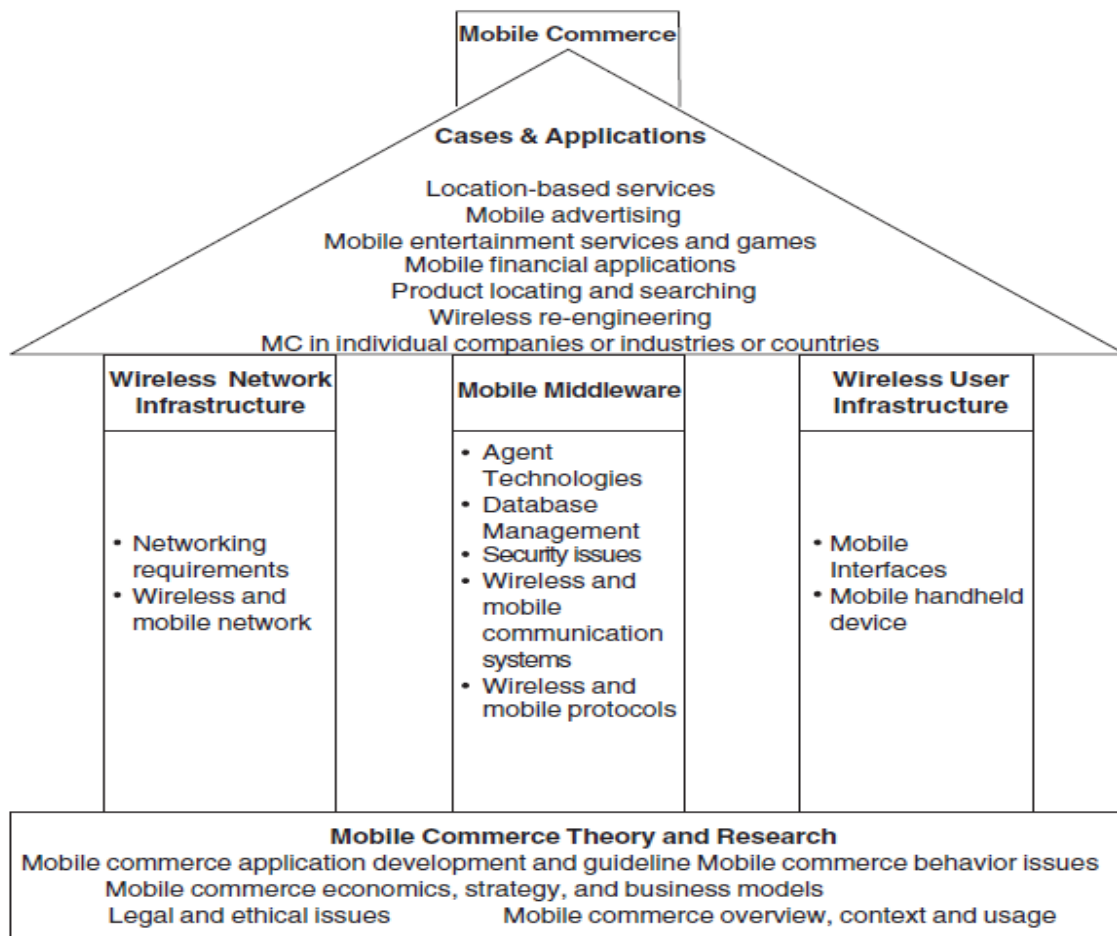
data, voice, video, or multimedia services to mobile devices with freedom of time and location limitation. The freedom of time and location is related to the concept of anytime and anywhere access that represents the two main characteristics of mobile wireless technologies: mobility and reachability (BenMoussa, 2005; Camponovo & Pigneur, 2003; Ng-Kruelle et al., 2002; Turban, et al. 2002).

M-Commerce is also known as mobile electronic commerce or wireless electronic commerce. It is believed to be the next gold rush after e-commerce. Business organizations of different industries are rushing to stake a claim (Stafford et al., 2003). However, m-commerce is many things to many people. Some people conceive m-commerce as an extension of ecommerce to mobile phones. Some people think it is another new channel after the Internet. In general, m commerce refers to any transaction with a monetary value that is conducted via a mobile telecommunications network. According to this definition, m-commerce represents a subset of all e-commerce, including both business-to-business and business to consumer.

M- Commerce uses the internet for purchasing goods and services as well as sending and receiving messages using hand- held wireless devices. Wireless web applications will enable users with Internet enabled cell- phones. M- Commerce is believed to be driving fundamental changes in the way business is conducted in many industries, particularly in

telecommunications, information technology, media and financial services. M-commerce is so important because it represents the extension of the Internet beyond the static terminal of the PC, or even the television, into a more nimble, anytime, anyplace and anywhere context. It will enable millions of people to access web information services wherever they go (Yeo et al., 2003) Today, the mobile Internet is emerging even faster, in part because providers, content partners, customers, and investors are leveraging lessons from e-commerce.

Cellular carriers, both nationally and globally, have made significant advances to enable next generation data or —wireless Web services and mobile, —m-commerce. Broadly defined, m-commerce involves an emerging set of applications and services people can access from their Web enabled mobile devices (Sadeh, 2002). E.W.T. Ngai and A. Gunasekaran (2005) framed a fundamental framework for mobile commerce activity with inclusion of network infrastructure, wireless technology and provided a guideline for future m commerce research.



### 3. Various Mobile Commerce Applications

Many more people have access to a mobile phone than to a computer and this means that m-commerce has the opportunity to connect not just big businesses but also small business and consumers on a massive scale. In this sense, mobile phones have the potential to bridge the digital divide and allow organizations and individuals to reach out to one another more

easily than ever before (Mobile Commerce, 2008). After the appearances of a new technology a remarkable growth occurs in it. This has been the same in mobile commerce.

### 4. Mobile Commerce Solutions That Deliver Real-Time Information

Advertising and marketing agencies want systems that fairly provide access to clients across mobile

platforms. Carriers want to protect and monetize customer access but realize that they cannot deliver mobile commerce services completely on their own. Financial institutions and associations have strict compliance issues that must be met and also want to be sure transaction revenue remains in-house. Trusted service managers that will be necessary to make an electronic wallet succeed will only deploy large, secure data-processing facilities if access to customers is open and available across systems.

## 5. Mobile Wireless Technologies

Wireless media has gone under a rapid innovation process in search for a reliable, simple and business-viable solution to consumer demands for fast, easy, and inexpensive information access. Over the last few years, a number of wireless protocols have been developed and a variety of application vendors have begun to ship wireless products to the market. In fact, the word "wireless" has become a staple buzzword synonymous to "cutting edge" in the software and content sales vocabulary. The protocol specifications contain the clear description of today's wireless media capabilities.

- A. *Network technologies:* In general all the mobile protocols are very similar to each other, being client-server based, enabling a continuously increasing amount of services to be provided to the users. Although the protocols are very similar to each other but still the variety of protocols is introducing some challenges to the adoption of wide spread M-Commerce.
- B. *Bandwidth:* As bandwidth demand increases for new and existing network applications, very soon service provider may face the scarcity of bandwidth. This problem may be partially tackled by reuse of frequencies. Different standards, such as Bluetooth, IEEE 802.11, and others may recommend using the same frequency range and that may cause interference.
- C. *Security:* Currently, few wireless communication protocols offer encryption of the transmission. In security models of protocols that do have security encryption (such as WAP), there have been identified transmission security weaknesses in current protocols.

## 6. Products & Services Available

- **Mobile Ticketing:**

Tickets can be sent to mobile phones using a variety of technologies including b CODE and NFC. Users are then able to use their tickets immediately by presenting their phones at the venue. The travel industry is realizing the potential benefits of m-commerce, and is working on technologies that will eventually equal the ratio of b Code and NFC, update customers on flight status, notify them when this information changes and will offer to make new arrangements based on preset user preferences requiring no input from the user. Therefore, a customer's entire trip can be scheduled and maintained using a mobile device. Mobile ticketing for airports, ballparks, and train stations, for example, will not only streamline unexpected metropolitan traffic surges, but also help users remotely secure parking spots (even while in their vehicles) and greatly facilitate mass surveillance at transport hubs.

- **Mobile Vouchers/Coupons/Loyalty Cards:**

Mobile ticketing technology can also be used for the distribution of vouchers/coupons/loyalty cards. The voucher, coupon, or loyalty card is represented by a virtual token that is sent to the mobile phone. Presenting a mobile phone with one of these tokens at the Point of sale allows the customer to receive the same benefits as another customer who has a loyalty card or other paper coupon/voucher.

- **Content Purchase & 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, mp3 players and video players into a single device will result in an increase in the purchase and delivery of full-length music tracks and video. Download speeds, if increased to 4G levels, will make it possible to buy a movie on a mobile device in a couple of seconds, while on the go.

A new online shopping trend of "booking on the web for pickup later in stores" is evolving into a new concept: Just In Time (JIT) pickup for mobile shopping behind the wheel. This JIT

pickup for mobile shopping indicates a "real-time bridge between virtual world and real world".

- **Location Based Services:**

Unlike a home PC, the location of the mobile phone user is an important piece of information used during mobile commerce transactions. Knowing the location of the user allows for location based services such as:

1. Local maps
2. Local offers
3. Local weather
4. People tracking and monitoring

- **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:

1. News services
2. Stock data
3. Sports results
4. Financial records
5. Traffic data and information

Particularly, more customized traffic information, based on Users' travel patterns, will be multicast on a differentiated basis, instead of broadcasting the same news and data to all Users. This type of multicasting will be suited for more bandwidth-intensive mobile equipment.

- **Mobile Banking:**

Banks and other financial institutions are exploring the use of Mobile Commerce to allow their customers to not only access account information, but also make transactions, e.g. purchasing stocks, remitting money, via mobile phones and other mobile equipment. This service is often referred to as Mobile Banking or M-Banking. More negative issues like ID theft, phishing and Pharming are lurking when it comes to mobile banking, particularly done on the mobile web. Net security technology free from redundancy and paradigm shifts away from mobile web-based banking will be an optimal solution to mobile banking in the near future.

- **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.

- **Travel and Ticketing:**

By utilizing the B CODE technology or NFC1 technology we could use the mobile phone as a means receiving E-Tickets. B CODE tech consists of sending text SMS which is scan able from the mobile phone display screen through the related set. So by receiving the chosen SMS, the ticket is practically received and we could present the mobile phone to the scanning machine at the ticket receipt spot.

- **Commerce:**

Commerce is the exchange or buying and selling of commodities on a large scale involving transportation of goods from place to place. It is boosted by the convenience and ubiquity conveyed by mobile commerce technology. There are many examples showing how mobile commerce helps commerce. For example, consumers can buy products from a vending machine or pay a parking fee by using their cellular phones, and mobile users can check their bank accounts and perform account balance transfers without needing to go to a bank. (Hu, 2005)

- **Education:**

Similar to other wired technologies, mobile wireless technologies have first been used in industry sectors such as business. The movement of mobile wireless technologies in education is a recent trend, and it is now becoming the hottest technology in higher education (Levine, 2002; McGhee & Kozma, 2001; McKenzie, 2005).

- **Enterprise Resource Planning (ERP):**

In the coming mobile commerce era, users will want to be able to have access to the right resources and work as efficiently as possible— whether they are traveling, seeing a customer or working at other remote

locations– with their ERP systems (Siau et al., 2001). Many ERP vendors are currently researching for means to provide mobility to ERP users. They attempt to connect employees to their work more effectively than ever before by enabling mobile phones and other wireless devices to become a new kind of tool to seamlessly exchange information, automate data entry and perform a range of transactions anytime, anywhere (Siau and Shen, 2003).

- **Entertainment:**

Entertainment has always played a crucial role in Internet applications and is probably the most popular application for the younger generation. Mobile commerce makes it possible to download game/image/music/video files at anytime and anywhere, and it also makes on-line games and gambling much easier to access and play.

- **Health Care:**

The cost of health care is high and mobile commerce can help to reduce it. By using the technology of mobile commerce, physicians and nurses can remotely access and update patient records immediately, a function which has often incurred a considerable delay in the past. This improves efficiency and productivity, reduces administrative overheads, and enhances overall service quality. Mobile technologies such as PDAs, Laptops or Tablet PCs can be of great value in hospitals and healthcare facilities by allowing better access to critical information – e.g. patient status, staff and patient location and facilities availability (Larkin 2001; Banitsas, 2002; Chau et al. 2004; Varshney 2004; Rowley 2005). Healthcare facilities that choose to adopt such technologies may be able to not only perform better but ultimately provide more efficient and better quality of care for patients (Bahlman et al. 2005).

- **Inventory Tracking and Dispatching:**

Just-in-time delivery is critical for the success of today's businesses. Mobile commerce allows a business to keep track of its mobile inventory and make time-definite

deliveries, thus improving customer service, reducing inventory, and enhancing a company's competitive edge. Major delivery services such as UPS and FedEx have already applied these technologies to their business operations worldwide with great success.

- **Auctions:**

Over the past three years mobile reverse auction solutions have grown in popularity. Unlike traditional auctions, the reverse auction (or low-bid auction) bills the consumer's phone each time they place a bid. Many mobile PSMS commerce solutions rely on a one-time purchase or one-time subscription; however, reverse auctions are high return applications as they allow the consumer to transact over a long period of time.

- **Mobile Purchase:**

Mobile purchase allows customers to shop online at any time in any location. Customers can browse and order products while using a cheap, secure payment method. Instead of using paper catalogues, retailers can send customers a list of products that the customer would be interested in, directly to their mobile device or consumers can visit a mobile version of a retailer's ecommerce site. Additionally, retailers will also be able to track customers at all times and notify them of discounts at local stores that the customer would be interested in. New technology from companies like Shop Text allow consumers to purchase products from their cell phones using text messaging and technology from companies like mShopper & mPoria allow retailers to launch their own mobile commerce shopping sites.

- **Mobile Marketing:**

Mobile marketing is an emerging concept, but the speed with which it's growing its roots is remarkable. Mobile marketing is highly responsive sort of marketing campaign, especially from brands' experience point of view. And almost all brands are getting higher campaign response rates. Corporations are now using m-commerce to expand everything from

services to marketing and advertisement. Although there are currently very few regulations on the use and abuses of mobile commerce, this will change in the next few years. With the increased use of m-commerce comes increased security. Cell phone companies are now spending more money to protect their customers and their information from online intrusions and hackers. New technology from companies like emporia is also allowing companies to sell merchandise to consumers over the mobile internet.

- **Mobile Vouchers/Coupons/Loyalty Cards:**

In combination with pos terminals this technique can be used for distributing vouchers for top up of mobile phone accounts. Advantage of this system is reduce of cost for distribution, main disadvantage is that that you need a widely spread network of pos terminals. There are two models present in the market: voucher distribution (PIN based), where hidden recharge number (PIN) is printed on terminal and direct top up, where subscribers number is entered on terminal and recharged automatically.

## 7. Payment Methods

The main payment methods used to enable mobile commerce are:

1. Premium-rate calling numbers,
2. Charging to the mobile telephone user's bill
3. Deducting from their calling credit.
4. Registration of a credit card that is linked to a SIM card.

## 8. Benefits of Mobile Commerce

- **Economy of Scale:**

Mobile commerce provides economy of scale to the service provider. Economy of scale means benefit from large sale and due to that large production company enjoy the benefit of less cost of production or overhead cost.

- **Quicker and Easier Delivery:**

With the help of mobile commerce customers can get the product and services

easily and quicker than the actual sales because they get order quickly due to the time efficiency.

- **Effective Target Marketing :**

Mobile commerce is helpful in targeting the actual customers. Companies can directly focus on their actual and potential customers in more effective manner.

- **Privacy-Friendly Data Mining on Consumer Behavior :**

Mobile commerce also helps the company to store the data in the record with full privacy. Nobody can get or access the record of company which it got from its mobile networking.

- **Environment-friendly and resources-saving efficacy :**

Mobile commerce is environmental friendly and resource saving because in mobile commerce customers do not want to visit the company that saves the time and other resources. It is also environmental friendly due to less use of motor vehicles to visit the company.

## 9. Conclusion

Mobile commerce is also termed as M-commerce. It is described as the act of performing electronic transaction of financial implications from a mobile device such as a cellular phone or wireless telecommunication networks. Today's wireless technology is providing a lot of services to users such as, users can send/receive emails, download music/graphics/animations, shop for goods and services, play interactive online games, trade stocks, book tickets, find friends, conduct financial and banking transactions and so on. One of the main benefits of using m-commerce services is the ability to carry out tasks anywhere, anytime.

The ease of communication with goods and service presenters, in 24 hrs and without any location limitations, has caused an everyday popularity increase in mobile trading. Both the telecommunications industry and the business world are starting to see m-commerce as a major focus for the future. 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. The mobile Internet channel has opened up new possibilities.

There is a big gap between technology's capabilities and the consumer's expectations. But, the good news is that problem areas like slow transmission speeds and high costs are being addressed by operators and equipment manufacturers. M-Commerce players need to improve the user interface soon and implement innovative pricing structures. Despite the initial frustrations of the users, consumers envision that once the glitches are worked out, mobile applications will become integral part of their daily lives. On the other hand, Investing in m-commerce has its risks. While there is potential for a lot of money to be made, there is also potential to lose everything.

New wireless users need to register with the regular sites in order to access all the features. This means that the wireless sites are aimed at strengthening customer relationships and loyalty. For these users to take advantage of the wireless channel, usability of these wireless sites needs to be significantly improved. We identified the need to provide interface support for both novice and experienced users at these sites.

## References

- [1] Au, Y.A. & Kauffman, R.J. (2007). The economics of mobile payments: Understanding stakeholder issues for an emerging financial technology application, *Electronic Commerce Research and Applications*
- [2] Barwise, P. and C. Strong, "Permission-Based Mobile Advertising," *Journal of Interactive Marketing*, Vol. 16, No. 1: 14-24, 2002.
- [3] Upkar, V. (2002). *M-commerce: framework, applications and networking support*, Kluwer Academic Publishers Hingham, MA, USA Volume 7, Issue
- [4] Kalakota, R. & Robinson, M. (1999). *e-Business: Roadmap for Success*, Addison Wesley
- [5] Mahil, C. (2008). *Mobile Payment Systems and Services: An Introduction*, IDRBT, Hyderabad
- [6] Sharma, D. *Government Policies & Regulations: Impact on Mobile Commerce in Indian Context*, Indian Broadcasting (Engineering) Services, Government of India
- [7] Sadeh, N. (2002). *M-commerce: Technologies, services, and business models* (pp. 177-179). New York: John Wiley & Sons.
- [8] O'Connell, J. (2005). *M-commerce*, Blackwell Encyclopedic Dictionary of International Management, pp.1-252.
- [9] Stafford, T., Gillenson, M. (2003). *Mobile Commerce: What It Is and What It Could Be*, *Communications of the ACM*, December, Vol. 46 Issue 12, pp. 33-34.
- [10] Smith, A. (2006). Exploring m-commerce in terms of viability, growth and challenges, *International Journal of Mobile Communications*, Vol. 4 Issue 6, p. 4
- [11] Ting, Peng L. (2004). Introduction to the Special Issue: Mobile Commerce Applications Source, *International Journal of Electronic Commerce*, Volume 8, Issue 3 Number 3/Spring.
- [12] Okazaki, S., New perspectives on m-commerce research. *Journal of Electronic Commerce Research*, 2005. 6(3): p. 160