

## **Mobile Electronic Commerce: What Is It? Who Uses It? And Why Use It?**

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### **ABSTRACT**

When individuals and businesses conduct transactions electronically over a network using mobile devices, they have participated in mobile e-commerce. The advantages and disadvantages of mobile e-commerce are presented in this paper. This is followed by a discussion of who is using mobile e-commerce and why they are using it. Information is also presented on how to be successful with mobile e-commerce.

### **INTRODUCTION**

Since the earliest origins of time, people have always looked for ways to make their lives easier. People often use technology as a key factor in this simplification of their lives. One of the biggest advents in technology was the Internet. The earliest form of the Internet involved the transfer of data from person to person. People quickly realized that they could not only use the Internet to transfer data, but also in many other ways as well. With the explosion of the Internet, people looked for ways that they could benefit. At the same time companies were also looking at the Internet as a way to help out their business. Companies realized that they could use the Internet as a way to promote their business to potential customers all over the world (Venkatesh, Ramesh, & Massey, 2003). Companies saw the demand for the Internet and decided to try to benefit from this growth. At first, companies only posted information about their products on the Internet, and consumers still had to call into to the company to place their orders. Companies soon realized that they needed to be able to sell their goods and services over the Internet in order to reach the most customers that they could. With the improvements in technology, companies were then able to put not only put the information about their products online, they were actually able to sell their products to consumers as well (Maamar, 2003). This meant that companies were able to market and sell their goods to people all over the world, all the consumer had to have was access to the Internet. This also meant that consumers now had more choices about where they bought their goods and services. The Internet gave the company the ability to sell their goods and services at all times of the day, not only during their normal business hours. These extended business hours also meant that the customer could order and purchase what they needed whenever it was convenient. The time of day was now no longer relevant when it came

to purchases (Maamar, 2003). This was the start of electronic commerce, or as many people called it, e-commerce (Dionisio, Intrigila, & Inveradi, 2000).

## **BEGINNINGS OF ELECTRONIC COMMERCE**

A good definition of e-commerce comes from L. Dionisio (2000) who wrote that it is “the carrying out of business activities that lead to an exchange of value, where the parties interact electronically, using network or tele-communication technologies”. All the customer had to do was to sign onto the Internet, and he/she had an almost endless number of choices when it came to his/her shopping needs. But soon, consumers started to want more convenience in their shopping options. Consumers started to look for different ways to access the Internet to take care of their business without having to sit in front of a computer all day. Consumers today are on the move and are looking for technology that matches their mobility. Consumers are now looking for ways to match their mobility with the ease of e-commerce. As a result of this search, there has been a push towards accessing the Internet through mobile devices (Andreou, Chrysostomou, Leonidou, Mavromoustakos, Pitsillides, Samaras, & Schizas, 2001). This type of electronic commerce is called mobile e-commerce, or as many people have deemed it, m-commerce.

### ***The Move Towards Mobile Electronic Commerce***

Mobile electronic commerce, or m-commerce, is defined as the ability to conduct commerce, using a mobile device, e.g. a mobile phone (or cell phone), a PDA, or a smartphone, while on the move (Tarasewich, Nickerson, & Warkentin, 2002). This definition of m-commerce describes why the appeal for this type of technology has become so high. M-commerce allows customers to access the Internet and conduct business just like they would if they were sitting in front of their personal computer. But with this type of commerce, customers do not have to be physically in front of their computer, they can be on the move. Since the company has to be in sync with the demands of its customers, companies have become very aware of the demand for this mobile type of commerce. At the same time that their customers were demanding m-commerce, companies were looking for ways to reach many of those mobile customers as well. Once mobile e-commerce was a possibility, many companies immediately made a push to try to capture a piece of this new commerce (Maamar, 2003). Companies liked the fact that they were able to reach those customers that were on the move, and were able to capture that revenue that they had previously been missing (Venkatesh, et.al., 2003). Companies soon realized that this was the wave of the future, and realized that they could sell more goods and services if they cashed in on the mobile electronic commerce craze.

## **ADVANTAGES OF MOBILE ELECTRONIC COMMERCE**

After having used electronic commerce for several years, both consumers and companies were now looking for a way to broaden their horizons when it came to the buying and selling of their goods. Both consumers and companies were looking for the newest technology, and it came via mobile electronic commerce. When compared to traditional electronic commerce, mobile electronic commerce has many advantages. The first advantage is the consumer’s ability to use mobile commerce anytime and anywhere with a light-weighted device (Tarasewich, et.al., 2002).

Consumers are now able to do their shopping when it is convenient for them. Consumers are able to shop without having to physically be in front of their personal computer (Prinn, 2002). This also allows the consumer to shop even if the store or company is physically closed. The orders are placed into the company's database and filled once the company checks them. The company benefits because it does not have to physically be open at all times of the day and night to actually take the orders from the consumers. All the company has to do is fill the orders once they check the database. The consumer, with the help of the Internet, has the ability to research the company without having to call the company to talk to someone (Maamar, 2003).

A second advantage of mobile electronic commerce comes partly from the first advantage, when it mentions the light weight device (Dionisio, et.al., 2000). The light-weight device may refer to a cell phone, PDA (personal digital assistant), smartphone, or any other device like these. The reason that this is an advantage is because in recent years there has been a push in technology. With this push came a boom in sales of cell phones, in PDAs, in smartphones, and in many other handheld devices that people want to use to help to make their lives easier. The United States Census Bureau reported that in the year 2000, there were an estimated 159 million cell phone subscribers in the United States alone. This number is up from 34 million subscribers in 1995 ([www.census.gov](http://www.census.gov)). This meant that in only a five year span, the number of subscribers to cell phones alone had gone up 4.5 times. Keep in mind that this is only for cell phones and does not include the number of PDAs and smartphones being used. These numbers reflect the explosion in mobile technology in the United States today. These numbers can also equate to huge revenue increases for a company if they are able to attract some of these customers to use their wireless capabilities to come to their site and purchase their goods and services.

A third advantage of this mobile electronic commerce is the control of the data (Andreou, et.al., 2001). By accessing the data through a mobile device, the user is able to have sole control over the data that is streaming to their device. The consumer has control over what they want to see. At the same time, the user has the ability to personalize his or her mobile device. This personalization includes how they see the information, how they access the information, and when they access the information (Tarasewich, et.al., 2002). With the technology of mobile devices always changing, people are able to customize their devices to their specifications.

A fourth advantage of mobile electronic commerce is that this form of commerce can bring the consumer and the company together and bring about greater profits for the company and allow the customer to have a closer relationship with the company (Maamar, 2003). Companies are now able to reach those mobile customers that they may have previously been missing, and customers can feel like the company is right at their fingertips if they are able to access the company's web site through their phone. Customers may show more loyalty to companies whose sites are better set up for mobile electronic commerce, because it shows that the company is paying attention to its customers needs. Many consumers feel loyalty towards a company that they have shopped from in the past, and this loyalty eventually leads to bigger profits for the company.

## **DISADVANTAGES OF MOBILE ELECTRONIC COMMERCE**

Even though mobile electronic commerce has many advantages over traditional commerce, there are also drawbacks or disadvantages that need to be addressed as well. One of the drawbacks is the mobile device itself. The mobile devices may not be able to offer the same level of graphics or processing power of a personal computer. This is limited by the technology that is built into the mobile device. A company has to keep this in mind and try to set up its web page so that it is accessible by both personal computers as well as mobile devices (Oinas-Kukkonen, 2000). The consumer has to also realize that his/her technology may be limited on his/her device, so he/she may not have the same access to a web page on his/her mobile devices that he/she would have if he/she was using a personal computer (Andreou, et.al., 2001).

The second disadvantage of the mobile electronic commerce has to do with the technology of the mobile device as well. The size of the screen of the device may limit the complexity of the application. It may inhibit the consumer from having full access to the website, or it may limit the interaction between the consumer and the page (Venkatesh, et.al., 2003). The consumer may not be able to interact with the web page on the same level that he would be able to if he were accessing it using a personal computer.

A third drawback of mobile electronic commerce is the non-uniformity of networks. Each network may have a different approach to its version of mobile commerce (Tarasewich, et.al., 2002). What this means for the customer is that his/her actions may be dictated by what network carrier he/she has. Not all network carriers are created equal. Different carriers have different technologies built into their mobile devices. The user's ability to access a web page may be hindered by the technology used in the development of the mobile device.

A fourth drawback, that can be tied back to the network, is the limitations of the network service. More specifically, it is the short interval of time (Andreou, et.al., 2001). This can either be attributed to the short amount of time that customers have to complete their orders, or to the reliability of the network service. Many mobile devices are prone losing connectivity or to having short battery life, and the consumers need to be able to do their business in a timely fashion to avoid losing it mid-transmission (Andreou, et.al., 2001). Many consumers are also concerned with the security of mobile electronic commerce. Companies have to realize this fear of security when designing access to their site (Dionisio, et.al., 2000). They need to design a site where the consumer feels comfortable placing his orders over a mobile network.

## **WHO IS USING MOBILE ELECTRONIC COMMERCE**

Even though there are still concerns about using mobile electronic commerce, there are several industries that have gone ahead with their plans and have started using this form of commerce. The first industry using mobile commerce is the financial services industry. With their mobile devices customers are able to access their bank accounts and even pay their bills (Tarasewich, et.al., 2002). Consumers can also have access to brokerage services, such as Fidelity's Instant Broker™, which would provide stock quotes and allow consumers to buy and sell stocks over their mobile device (Maamar, 2003).

The second industry is the telecommunications industry. Through their handheld device, customers are able to access their services, pay their bills, and even change their services (Tarasewich, et.al., 2002). The service and retail industry is the third industry that has attempted to take advantage of the mobile electronic commerce. Through their handheld devices, consumers can shop, pick out their goods and services and even pay for them (Tarasewich, et.al., 2002). For example, Kraft deliveries recipes to customers' iPods. This allows consumers to buy the Kraft ingredients needed for recipes as they shop (Wegert, 2005).

The information services industry is also trying to take advantage of this new form of commerce. Through this industry consumers can receive financial news, sports scores, and even traffic updates, all tailored to their specific requests (Prinn, 2002).

### **HOW TO BE SUCCESSFUL IN MOBILE ELECTRONIC COMMERCE**

Once companies have decided to enter into the mobile electronic commerce market, they need to realize there is a series of steps to follow in order to become successful. The four major steps are attraction, interaction, transaction, and payments (Maamar, 2003). In the attraction step, companies need to find ways to bring customers to their web page. Companies can take advantage of the fact that their customers are on the move. The businesses can have special offers and promotions depending on where the customer is at a certain time. The company can also tailor its services to the specific customer and his/her profile (Maamar, 2003).

The second step is the interaction phase. The interaction phase is important for companies because they have to keep in mind that the consumer may have a limited ability to interact. The customer's interaction can be limited by the technology that he/she has on his/her mobile device or by the amount of free time that he/she has during the day (Tarasewich, et.al., 2002). Customers like the fact that mobile electronic commerce is quick and easy. It is great for those situations where there is not enough time to interact with the company many times throughout the day (Maamar, 2003).

The transaction phase is the next phase that needs to be reviewed. This step is important for companies to review because this step actually involves the processing of the transaction. Since customers are not able to stay online at all times, they need to sign off. This means that the company may need to finish the transaction without the involvement of the customers (Maamar, 2003).

Once the transaction draws to a close, the company and customer have to complete the payment phase, which is the fourth phase. The company has to make sure that the payment phase is secure and that the customer feels at ease when making a payment over a wireless network (Tarasewich, et.al., 2002). Once a company has successfully addressed all four of these steps, it may be able to enter the mobile electronic commerce market and feel comfortable about doing business in this manner.

## **WHERE MOBILE E-COMMERCE IS HEADED**

As discussed throughout this paper, most of the transactions at this stage in time are data driven. Most industries allow their customers to transmit and receive data and information over their cell phones. Most of the transactions that have been described within this paper are very simple commands that do not require much interaction between the two entities. The customer “logs onto” a screen sent from the home office of the company, where the customer is able to execute information gathering tasks. Many companies realize that at this stage in time, the only capabilities that many of their customers have are these very simple executions. However, customers desire the freedom to be able to conduct their transactions just like they would if they were on the Internet. Therefore, these companies changed their game plan and decided to take what the market, or the technology, was giving them.

### ***Premium Content Transactions***

In January 2006, software company QPass announced that it had processed over \$1 billion worth of premium content transactions (Smith, 2006). QPass produces digital commerce software used by carriers such as Alltel, Cingular Wireless, Sprint, Suncom, T-Mobile International, and Skype, among others (Smith, 2006). The \$1 billion mark is even more staggering considering that this amounts to over 400 million paid downloads for their company’s products. When breaking down this figure, fifty-six percent came from cell-phone ring-tones, twenty percent from mobile games, and fifteen percent from screensavers for the mobile devices (Smith, 2006). QPass has helped developed software to allow companies to cash in on the market that already exists. Currently, many companies are looking to Asia for the newest developments (Staff, 2006).

### ***Wallet Phones***

Asia is proving to be the breeding ground for the newest mobile commerce technologies. Many companies are looking at the success in Asia to see how they can translate it to success in their countries, and the biggest country that is keeping an eye on this progression is the United States. The newest trend in technologies involves using your phone as a wallet. Instead of scanning a credit card or a frequent buyer’s card, patrons in Asia are now swiping their phones to pay for some of their everyday expenses. In Japan and Korea, users wave their m-commerce enabled phone in front of scanners to pay for the train or subway or to buy food or beverages from a snack machine (Staff, 2006). In order to do this, the phone has to be outfitted with the technology that allows it to communicate with the scanner at various establishments and allows the consumer to pay for their goods and services wirelessly through their phones (Staff, 2006). This discloses a big security issue for the user. To help ease concerns, fingerprint technology is being built into the phones to help secure the users financial information if the phone is ever lost or stolen. The user has to scan his or her fingerprint over or into the phone in order for the commerce function to be accessible. One company, Authentec, is pushing this fingerprint technology to the forefront (Staff, 2006). Currently, Authentec states that there are more than eight million fingerprint sensors under its watchful eye, which accounts for ninety-five percent of the market ([www.businesswire.com](http://www.businesswire.com)). Americans have started to push for this type of m-wallet phone technology to be brought to their phones. Motorola is currently working on a model of

this technology in its phone in an experimental basis (Smith, 2006). Several other companies have had trial runs with users being able to waive specially equipped phones in front of scanners to pay for their purchases; one of these companies is NTT DoCoMo (Smith, 2006).

### *Customers' Desires*

A looming question on the minds of many companies is whether or not people would use this type of technology if it was given to them. A recent survey attempted to answer those questions and alleviate some fears about the desire to have this technology. An online survey of 500 United States cell phone users asked several questions regarding desire for the technology and how the consumers would use it once they had the technology (Staff, 2006). Of the five-hundred, fifty-eight percent would purchase a cell phone equipped with the same m-commerce, wireless banking, and fingerprint scanning technology that is being used in Asia right now. Forty-seven percent of those surveyed said that they would change cell phone carriers to be able to use these services. A little over half those surveyed (fifty-one percent) said that they would use the phone to enter sporting events, trains or subways, or would purchase sodas or other items out of vending machines. Forty-three percent said that they would use their phones to purchase goods and services from a store, and forty percent of those surveyed would use the phones to conduct wireless banking (Staff, 2006). Because this survey was conducted online and sponsored by AuthenTec, it may be biased towards individuals that desire this technology and may not be generalizable to the entire cell phone carrying population. When those same five hundred people surveyed were asked about the security of these devices, the responses were almost overwhelming. Seventy-three percent said that they wanted the fingerprint scanner technology to protect their financial data stored in their phones. Sixty-one percent desired sensors to protect purchases at vending machines, and fifty-nine percent wanted protection when buying books and music with their phones. Of the five hundred, fifty-three percent believed that wireless banking is the most important function to protect on the phone (Staff, 2006).

## **CONCLUSION**

People are always looking for new ways to make their lives easier. People often look to technology as a tool in the simplification of their lives. The newest technology allows people to access the Internet through their mobile devices. Once on the Internet, consumers are able to conduct the same business that they would be able to conduct on their own personal computer. This mobile electronic commerce enables the consumer to be able to conduct their business while on the move. In today's fast-paced society, people are always looking to do everything on the go and do not want to be slowed down. Also, as technology changes throughout the years, people are now looking for their mobile devices to perform more tasks than ever before. It seems logical for people to want access to the Internet through their mobile devices and to want to take care of their business through these devices. Through the origin of mobile electronic commerce, people are now able to conduct their business over the Internet without having to sit in front of their computer all day. This saves consumers time because they no longer have to be logged onto their personal computer at home or work. This allows consumers to be mobile and on the go. But, mobile electronic commerce has also helped the companies as well. Companies are now able to reach these potential consumers that are always on the move. Companies had previously missed out on this demographic because many consumers either did not have the time

to stop to conduct their business or a way to conduct their business while on the move. Now, companies are able to reach those mobile consumers that they may have missed in the past. So both consumers and companies are benefiting with the advent of this newest form of technology. At this point in time, the biggest winners seem to be the companies who realize that this version of commerce is in its earliest stages and who are able to adapt their selling techniques to fit what the market gives them. As evidenced by companies such as QPass, there is money to be made with this type of commerce. But will the version of mobile e-commerce that was promised to users many years ago ever come into fruition? If carriers and companies take the lead of what is happening in Asia, then the answer maybe yes, in a couple of years. The United State and other countries are trying to build off the success of mobile e-commerce in Asia and trying to adapt both the technology and their own companies so they can benefit in the long run. And that is ultimately what this is, a long run. It will eventually take many years, and several trial runs of different software and versions to get to a point where the consumer can use mobile e-commerce seamlessly. Consumers must be patient, realizing that along the way there will be bumps in the road. These bumps are caused by the consumers demand for cell phones that allow them to take advantage of m-commerce, and companies trying to ensure that their technology allows m-commerce to work seamlessly. After all, m-commerce is a technology that is supposed to make our lives easier, not cause more headaches.

There's an old story about the person who wished his computer were as easy to use as his telephone. That wish has come true, since I no longer know how to use my telephone. (B. Stroustrup, creator of C++ (Venkatesh, et.al., 2003))

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