

Secure M-commerce Business over Global System For mobile communications (GSM)

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ABSTRACT

Global system for mobile communication has changed the face of communication and information exchange, much as the internet did with the advances made in the mobile technology arena, new opportunities are created. Mobile communication (m-commerce) is one such opportunity. Each new advance in technology brings with its associated risks. This paper focuses on the risks involved with m-commerce for the business industry. This paper provides a detailed overview of basic service that any m-commerce application should provide to the business industry. These principles provide the foundation for securing any financial transaction over untrusted Networks. The security of GSM networks has come under attack in the past. This is largely due to the fact that the GSM consortium opted to develop their security technologies in secret, rather than in public domain. This paper aims to evaluate the security offered by GSM and access potential attacks in order to further understand risks associated with m-commerce business over GSM. Keywords m-commerce, GSM, E-commerce, customer, receive order, invoice, shopping goods.

INTRODUCTION

Rarely has a new area of business been heralded with such enthusiasm as “mobile commerce”, that is the conduct of business and service over portable wireless device. Due to the astronomical growth of the internet users, maturation of the internet technologies, realization of the internet’s capabilities, the power of electronic commerce, and the promising advancement of the wireless communication technologies and devices, mobile commerce has rapidly attained the business forefront. M-commerce, although not fully mature, has the potential to make it more convenient for customers to spend money and purchase goods

and services. Since wireless devices travel with the consumer, the ability or perhaps temptation to purchase goods and services is always present. This is clearly a technique that can be used to raise revenue. Also the successful future of m-commerce depends on the power of the underlying technology drivers and the attractiveness of m-commerce applications.

M-commerce is an e-commerce with wireless access. E-commerce is the subset of m-commerce. If one wants to operate an M-commerce site, one should make arrangements to facilitate exchange of goods and services via the site. In this regard, buyers or customers could:

- (i) View the goods and services available.
- (ii) Purchase any point if goods and services using the shopping cart. Shopping cart is the electronic site like software that will pick anything you buy from the shop to shopping business.
- (iii) One should have a means of making payment for goods and services selected for purchase. Typically a number of payment systems are displayed or provided and the user selects the one of most interest to him or her.

Furthermore, each payment system can operate by entirely different independent body and not necessary by own m-commerce exchange. Adequately arrangements are however made between the owner m-commerce exchange and payment services providers.

OPERATION FEATURES OF M-COMMERCE

1. Anyone who has goods and services to market contact the M-commerce, to be included in the online database of the m-commerce exchange.
2. If there is an approval after processing the online form the goods and services providers is requested to provide information about goods and services to upload to the m-commerce site. Such information include name of each items, item code, brief description, unit cost, delivery items, quality discount and any

information the M-commerce exchange may deem necessary.

It is responsibility of the m-commerce exchange designs to providers a home page featuring a broad classification of goods and services offering. As the user to see clicks on a choice another page of titles would come up to re-appear the user to see the particular item of interest.

Before negotiating through the available goods and services a user should be requested to choose whether he or she want to view or purchase the item of interest a business would be deployed were item selected by the user replaced along with the individual cost and cumulative cost when the user indicates that he has finished selection, the payment option are them displayed so the user can select a mean of payment.

The payment system operates on the total cost of the item in the shopping chart and handles all aspect of security for such online payment. Depending on the arrangements made by the m-commerce exchange operators each online payment system provided would credit the amount of online exchange operators with the payment made by the buyer less the agreed commission due to payment system provided. Because the m-commerce exchange it selling goods and services that actual become to a wide range of business and individuals, it must have a means transaction actual own of the each goods and services been purchase so as to effect the crediting, the owners accounts after receiving payment collection via the payment system providers. The information

about the owner of goods and services should not normally make available to buyer online. However, where physical goods have to be shifted to a buyer; the ones on the m-commerce exchange operator to notify the merchant so that it can shift to the buyer the goods it pay for.

In the context of m-commerce, the normal expectation is that the m-commerce exchange can be accessed via handheld or portable devices from anywhere in the world where there is internet connectivity and at any time of the day, or all year round. One major advantage of m-commerce exchange concept explained above is that anyone who decides to use the exchange need not know anything about the internet but can have a book it sells as a goods and services are marketed via the m-commerce exchange web sites. Furthermore, anyone (middle men) without their own goods and services can arrange to sell other people goods and services via the site and they are although, they are actual owners of goods and services. This creates job opportunity for many without transferring the responsibility of internet on online marketing directly to them.

E-commerce (electronic commerce) can be defined as the mutual exchange of perceived or monetary value by electronic means over open accessible networks. This basically means communication over the internet for some or all of the transaction processes (ARC Group 2000). M-commerce (M-commerce) can be defined as any transaction with added value for the user, which is carried out by means of mobile/wireless device or infrastructure (ARC Group 2000).

M-finance (m-finance) is a subset of M-commerce that offers a range of banking share dealing and insurance services (ARC group 2000). With the coming of advanced and sophisticated services, mobile communications combined with e-commerce proportions are heightening the attractiveness of M-commerce. The key drivers of this are:

- Ubiquity: The anytime anywhere” advantage of M-commerce (ARC group 2000). Smart phone may fulfil the need for both real time information and communication, independent of the user’s physical location (Miiller-verse, 2000).
- Reachability: using a mobile terminal, a user can be contacted anywhere anytime. Mobile handsets also provide users the ability to restrict their reach ability to certain people (Miiller-verse, 2000).
- Personalization: Handsets are effective personal accessories that are capable to holding data and enabling access to information and services tailored to the needs of each individual (ARC group 2000).
- Localization: Nothing where the user is and providing information relating to that location adds a unique value to mobile services.

- Convenience: Mobile subscribers have become accustomed to their devices that store data and are always at hand. More advanced application is driven by technology further enabling the mobile subscriber.
- Convergence: Technological applications can be decoupled on the move. This is blurring the divide between mobile phones and PCs. Even increasing sophistication and functionality sustains further handset development.
- Internet Access: Instant connectivity to the internet from a mobile device is fast becoming a reality and will take off with the introduction of GPRS. This suggests that mobile devices will become the preferred means of accessing information on the internet.

However, there are also several factors that may slow or constrain the progress of M-commerce. These inhibitors include the following.

- Security: The public has serious concerns about the security of the internet. This has been a major constraint to consumer e-commerce. This negative perception may be transferred, or potentially magnified to the mobile arena (AGC group 2000).
- Interoperability: Due to the range of handset functionalities and operating systems, there are inherent costs associated

with delivering a range of services. This may determine some content providers from making the investment and carrying the overheads associated with such a service.

- Usability: The internet provides rich content via the large screens and multimedia capabilities of PCs. The constraints imposed on the mobile handset might limit its appeal to users (ARC group 2000).

E-COMMERCE AND M-COMMERCE IN AFRICA

The internet has been described as the great equalizer, as people can get information about any conceivable topic at the click of a button, the limitation of this kind of information is that most of it runs over wired networks is not as readily available as in other parts of the world. Wireless network could be the answer to delivering internet information service to the masses in Africa. Further to this, Africa has traditionally been an under-banked market, as access to bank is very limited. Combining the wireless space with m-commerce can change many of these facts. Not only can one deliver content to the users over GSM, one could also give them access to business services they never had access to before.

LITERATURE REVIEW

Mobile e-commerce, or simply “M-commerce” refers to e-commerce transactions conducted

through wireless, internet enabled devices such as cellular phones and personal digital assistants (PDSs) (Ghosh and Swaminatha, 2001; Coursaris et al, 2003, Liang and Wei, 2004, Lee and Benbasat, 2004). Example of M-commerce includes mobile banking, mobile stocks and mobile ticketing.

Mobile commerce is the mobile variant of e-commerce (Coursaris et al, 2003). Since it is an extension of e-commerce, m-commerce shares some similarities with E-commerce, M-commerce, however, is not synonymous to e-commerce, neither is it simply another e-commerce channel. M-commerce and presents some unique characteristics and features that can provide customers with added values and benefits such as anytime and anywhere access, the capability to pinpoint mobile devices locations for personalization and localization, and the functionality to access information at the point of need (Tang and veijalain, 2001; Siau, 2001). M-commerce presents a new channel/medium for commerce. For m-commerce to become a viable means of doing commerce and to gain widespread adoption, it is important that vendors understand and focus on the “values” of m-commerce, from the customers perspectives; that is, what are customers overall assessments of m-commerce, and what do customers expect from M-commerce?

The promising future m-commerce is driven by its unique features but not available in traditional e-commerce, thus providing added value and

benefits to personalization, flexibility and localization.

Ankar and D' incau (2002) presented a framework which identifies the value-adding features of m-commerce. They made a distinction between the value that is offered by the wireless internet technology itself-wireless value- and the value emerging from the actual mobile use of a device-mobile value (Ankar and D' incau, 2002). In spite of the advantages and value that m-commerce can provide, there are a number of inherent limitations related to mobile devices and mobile services. Usability is considered as the biggest source of frustration of mobile internet users (venkataesh, etal, 2003) and has impeded consumer acceptance and use of m-commerce. Although mobility is a key advantage, the user interface of mobile devices is far from ideal and is suffering from some drawbacks when compared to personal computers, and complicated input mechanisms (siau et al 2001; lee and benbsat 2004). There are technical restrictions related to mobile services, which add new security and privacy concerns with regard to m-commerce. The four main elements of m-commerce work system includes business processes, participant, technology and information affects products and services provided or facilitated by m-commerce, which in turn, influence the customers of, -commerce work systems.

HISTORY OF M-COMMERCE AND GSM

In 2000 and 2001 hundreds of billions of dollars in licensing fees were paid by the European

telecommunications companies for the UMTs and other 3G licenses. The high prices paid were due to the expectations of highly profitable mobile commerce applications. These mobile commerce applications would provide by 2.5G and 3G cell phone services (Tiwari and Buse, 2007).

PDAs (personal digital assistants) and cellular phones have become so popular that many businesses are beginning to use M-commerce as a more efficient method of reaching and communicating with their customers. Although technological trends and advance are concentrated in Africa and in Asia, United states are also beginning to experiment with their early-stage M-commerce (Tiwari and Buse, Herstate, C. 2006). With the forth coming spectrum auction by the FCC (Federal Communication Commission), scheduled for early 2008, there will be major auction rule changes that will create more consumer options while reducing control by telecom operators as “networks gatekeepers”.

The less price sensitive early adopters from the 13-25 ages could drive the initial growth. Growth in mobile phone such as ringtones, games and graphics may displace depending on many traditional youth products such as music, clothing and movies. This would change the dynamics of all visual entertainment and product-service distribution worldwide so marketers could target end users with diverse youth mindset. The youth market has historically shown rapid viral growth with later gains acceptance in the mass market. While emerging market are proving to be the ideal solution for sustaining revenues in the face of

failing ARPU average price per unit, analyst say the rapid commercialization of 3G services is likely to open up new opportunities in developed market (Tiwari and Buse 2006).

In order to exploit the m-commerce market potential, handset manufactures such as Nokia, Motorola, and Qualcomm are working with carries such as AT and T wireless and sprint to develop WAP-enabled smart phones and ways to reach them. Using Bluetooth technology, smart phones offer fax, e-mail, and phone capabilities. “Profitability for device vendors and carriers hinges on high-end mobile devices and the accompany killer’s applications”, said Burchet. Perennial early adopters, such as the youth market, which are the least price sensitive, as well as more open to premium mobile content and applications, must also be a key target for device vendors.

Analogue cellular telephone systems experienced rapid growth in Europe during the early 1980’s. Each country developed their own system that was incompatible with all the others in both equipment and operation. This posed the desirable problem of each system only being functional within national boundaries, limiting the possibilities of achieving economics of scale that would drive the prices for the equipment down to an affordable level. These GSM networks offered enhanced features over analogue based system, like

- Total mobility: The user has the advantage of being able to travel to able different countries

and still being able to communicate on his mobile device.

- High capacity and optional spectrum allocations. By making use of smaller cells, the GSM networks could handle a higher capacity if calls. They utilize the assigned frequency bandwidth more efficiently than the older analogue systems.
- Security: Although not perfect, the security methodology standardized for GSM systems makes it more secure cellular telecommunications standard in use today.

GSM responsibility was transferred to the European Telecommunication Standards Institute (ETSI) in 1989 and phase 1 of the GSM specifications was published in 1990. The standards spread across the globe and by 1994 there were 1.3 million subscribers worldwide.

PRODUCTS AND SERVICES AVAILABLE FOR M-COMMERCE

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 customers can visit a mobile version of a retailer's e-commerce site. Additionally, retailers will also be able to track customers at all times and notify them of discount at local stores that the customers would interested

in. New technologies allows customers to purchase products from their cell phones using text messaging and allow retailers to launch their own mobile commerce shopping sites.

MOBILE MARKETING AND

ADVERTISING: 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 campaigns, 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 intrusion and hackers. New technologies from some companies are also allowing companies to sell merchandise to customers over the mobile internet.

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.

MOBILE BANKING: Banks and other financial institutions are exploring the use mobile commerce to allow their customers to not only

access account information, but also make transaction, 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.

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:

- New Services
- Stock results
- Financial records
- Traffic data and information

Particularly, more customized traffic information, based on user's 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.

CONTENT PURCHASE AND DELIVERY: Currently, mobile content purchase and delivery mainly consists of the sale ringtones, 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 one 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 the virtual world and the real world"

MOBILE

VOUCHERS/COUPONS/LOYALTY CARDS:

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

Mobile delivery enables:

- Economy of scale
- Quicker and easier delivery
- Effective target marketing
- Private-friendly data running on consumer behavior.
- Environment-friendly and resources-saving officially.

INDUSTRY AFFECTED BY M-COMMERCE

The Industries Affected by M-commerce Include:

- Telecommunications, in which service charges, bill payment and account reviews can all be conducted from the same handheld device.
- Service/retail, as consumers are given the ability to place and pay for orders on the online.
- Information services, which include the delivery of financial news, sports figures and traffic updates to a single mobile device.
- Financial services which include mobile banking (where customers use their handheld devices access their accounts and pay their bills) as well as brokerage services, in which stock quotes can be displayed and trading conducted from the same handheld device.

MOTIVATING FACTORS FOR M-COMMERCE

Internet use has grown to such a level on the strength of PC networks. Due to the huge base of installed PCs, this is predicted to grow in a faster pace in the days to come, electronic commerce and other communication applications are bound to thrive further. Also, these computing systems will have greater power and storage capacity, the best ever price performance ratios, more powerful and sophisticated applications will likely emerge for desktop computing and the internet. However, there are two major limitations on PCs. First, users have to sit in front of them, PCs, even portable-note book computers, have to load software, dial into and connect with a network service provider and await for the

initial process to be accomplished before launching an internet application.

OBJECTIVES OF SECURITY IN MESSAGE TRANSMISSION

In knowing and understanding the attacks on message we can look at the goals of securing transmissions. Regardless of who is involved, all parties to a transmission must have confidence that certain objectives associated to message transmission have been met. One such means of ensuring this is by means of cryptograph.

Cryptograph is the study of mathematical techniques related to aspects of information security like confidentiality, message integrity; entity authentication etc. cryptography provides the means to ensure that the objectives of communicating parties are met. These objectives are listed in table below and briefly discussed.

INFORMATION SECURITY

Confidentiality	Keeping information secret from all but those who are authorized to see it
Authentication	Corroboration of the identity of an entity, like a person, a computer terminal etc. and corroboration of the origin of the message.
Message Integrity	Ensuring the transmitted message has not been altered by unauthorized or unknown means.
Non-repudiation	Preventing the derail of some

	previous commitment or actions by the communicating parties.
Availability	Availability provides functionality to ensure that resources or information are accessible and usable upon demand by authorized users.
Authorization	Authorization provides functionality to determine whether users or applications are permitted to use computer resources.

(Stallings W. 1999; Forouzan 2007; Sanjay 2005).

CONFIDENTIALITY

Confidentiality protects against the threat of revealing information to a user not authorized to have that information. Authentication and access control provide some level of confidentiality by allowing only those users or processes that are identified, authenticated, and authorized to gain access to information. However, other measures provide additional levels of protection against disclosure by concealing the information.

Confidentiality is defined as the property that ensures that information is not made available to unauthorized users. Confidentiality mechanisms are intended to prevent information dissemination to users who are not authorized to receive it.

MESSAGE INTEGRITY

Integrity protects against the threat of corruption or modification of information (either accidentally or intentionally). Authentication and access control provide some level of integrity by allowing only those users who are identified, authenticated, and authorize gain access to the information. However, other approaches provide additional levels of integrity by detecting and, possible, correcting corruption or modification.

Integrity is defined as the property that information has not been altered or destroyed in an unauthorized manner. Integrity addresses the threat that value or existence of information might be modified. If an integrity mechanism cannot prevent alteration of the information, it must be able to detect them.

AVAILABILITY

Availability provides functionality to ensure that resources or information are accessible and usable upon demand by authorized users. Availability of computer system is a board area that may be addressed by a wide variety of method ranging from well-defined backup policies to fault tolerant computer architecture. Availability functionality can be provided by using combinations of other security breaches that would result in diminishes that would result in diminished availability.

Authentication and access control provide aspects availability by allowing only those users who are identified, authenticated, and authorized to, gain access to the information availability can be provided indirectly by using logging and audit

functionality provided within the security administration and management function by progressively improving the access control.

The use of availability security function, together with the established security policies, processed, procedures and standards, provide enhanced availability to the computer system by:

- By other security services protecting data required for recovery.
- By security processes and infrastructure providing for business continuity and disaster recovery.

M-COMMERCE APPLICATIONS.

According to ovum's research, there is a lot of uncertainty about which mobile commerce applications will be successful and make money. The researcher/consulting firm classified m-commerce application into three categories.

	Goods	Services	Information
<i>Business-to-consumer</i>	Shopping Vending Trending	Gaming & Gambling	
<i>Business-to-business</i>	Procurement Trading	Ticking E-cash Banking Discounts & Loyalty Schemes	Paid - for Information Advertising

M-commerce application (www.mamma.com)

According to m-commerce links, the general m-commerce applications are categorized as transaction management, digital content delivery

and telemetry services. The applications can be further subdivided into active and passive m-commerce applications. Active application relates with the application in which the user has to take the initiative on his wireless device. In contrast, the passive application themselves get activated towards accomplishing the assigned jobs or facilitate the users to carry forward.

Active applications: M-commerce transactions point to online shopping web site tailored to mobile phones and PDAs which are being equipped with the capabilities of browsing, selection, purchase, payment and delivery. These sited also include all the necessary shopping features, such as online catalogs, shopping carts, and back office functions as currently available for desktop computers. Leading online booksellers already started the commercial activities for wireless devices. Another important m-commerce transaction is to initiate and pay for purchases and services in real time. The highest volume of m-commerce transaction using wireless devices in the days to come is bound to occur on the side of micro-transactions.

The second important one is regarding content delivery. Wireless devices can retrieve status information, such as weather, transit schedules. Flash news, sports scores, tickets availability and market prices, instantly from the providers of information and directory services. Digital products, such as mp3 music, software, high-resolution images and full motion advertising messages, can be easily downloaded to and used in wireless devices when the 3G transmission

technology becomes usable. The proposed arrival of better display screen the higher bandwidth will surely trigger the development of innovative video applications. This will help wireless users to access, retrieve, store and display high resolution video content for a time of entertainment, product demonstration and e-learning.

The last major application of m-commerce is telemetry services, which include the monitoring of space flights, meteorological data transmission, video-conference, the global positioning system. Thus in the near future, wireless phones and appliances can be used by people to contact and communicate with various devices from their homes, offices or anywhere at any time. For example, delivery drivers will ping intelligent dispensing machines or users can transmit messages to activate remote recording devices or derive systems.

Passive applications: This type of application seems manifold and exciting. Instead of using dedicated cash cards for automatic collection of toll charges, digital cash can be used by integrating cash cards with mobile devices. Mobile users can be easily pay and record payment of toll, mass transit, fast food, and other transactions.

Nowadays, mobile users can send and receive short text message up to 160 characters that show up on the user's display screen. As digital convergence becomes more commonplace, all kinds of mail, such as e-mail, fax documents and

digitized voice mail, can be received passively. Thus it is felt that in the near future there will be many novel services for mobile users for a fixed fee. Further on, users may be tempted for some services free of cost for viewing audio or video advertisement delivered to their wireless device. Any kind of security breach, illegal intrusion, unusual event or unacceptable condition will trigger automatic notification to user irrespective of location. Airline companies are testing this technology to alert frequent air passengers regarding seat availability and upgradation, to notify the changes made in the timings etc. through wireless devices.

Passive m-commerce telemetry is the foundation of still another form of interactive marketing. Stores will be able to market their products and services by constantly transmitting promotional and inducing messages and doling out something towards getting the attention of both passers-by and remote mobile users.

M-COMMERCE TECHNOLOGY

There is a linkage between m-commerce and e-commerce. This relationship exists mainly because both involve electronic transactions that are conducted over computer-mediate networks via telecommunication networks. Furthermore, m-commerce exhibits all the different types of e-commerce, depending on the buyer and the seller involved, namely Business to business (B2B), Business to customer (B2C) consumer to business (C2B), and consumer to consumer (C2C) (Bhasin, 2005). Although m-commerce

delivers e-commerce over mobile devices, there are some features that are unique to m-commerce transactions or applications. Tiwari, et al. (2006) and UNCTAD (2002) identify a number of these unique features namely ubiquity, immediacy, instant connectivity, localization, data portability, pro-active functionality and simple authentication procedure.

m-commerce is currently applied to a number of business domains and new areas continue being identified. Ayo, et al. (2007) and Tiwari, et al. (2008) classify m-commerce applications into 8 broad categories namely m-banking, m-entertainment, mobile information services, m-marketing, m-shopping, m-ticketing, m-health and telemetric services.

SUMMARY

Business often needs the ability to process customer payments by different methods, depending on how, when and where the sale is made. Using this paper you can handle credit card payments over the counter, over the phone, through your web site, on the road using your mobile phone or in bulk using your office computer.

Instead of using multiple products and services, this paper allows you to access any of these payment channels using a single, integrated administration system. Depending on your needs, you only have to turn on or turn off these payment channels as required. Transactions may be processed by yourself, your employees or your customers, but they are all managed and tracked

by a single management system all the way to your bank.

The main of M-commerce makes it possible the concept of delivering value to the customer always, irrespective of his geographical location, as long as he/she is within the connection range.

RECOMMENDATIONS

Research and development are continuous processes; this is same in computer and software development. However, it is recommended that:

- Business men should adopt the M-commerce technology for their business transactions.
- Just as technologies that guaranty secured data over the internet should be used in the implementation of online transactions.
- Efforts should be made by government to improve the technological training centers in the country to equip the young graduates with up to data information on the technological developments.
- The M-commerce software developed should be deployed for use.

CONCLUSION

Just as the internet has changed the face of commerce forever, so as GSM has changed the face of communication and information delivery forever. Although originally only intended for voice traffic, GSM networks have continued to develop, as have the GSM – associated, or value added services.

Today a myriad of value added services are associated with GSM mostly because of the adoption of international standards, which guarantees interoperability. Some of these services include the short message service (SMS), Wireless Internet Gateway (WIG). Each of these services brings with them a host of possible application and opportunities. One such opportunity is m-commerce. By using mobile phones over a GSM network, user of these applications can effect a business transaction from anywhere in the world where there is GSM network coverage.

However, with these location independent opportunities comes risk. In order to ensure the integrity of payment instructions, these M-commerce messages must be secured, by some means, while traversing the global networks. In essence, the security required for these transactions are very similar to the security or more traditional internet based e-commerce transactions.

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