

Analysis of E-Commerce and M-Commerce: Advantages, Limitations and Security issues

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Abstract: E-commerce is widely considered the buying and selling of products over the internet, but any transaction that is completed solely through electronic measures can be considered e-commerce. E-commerce is subdivided into three categories: business to business or B2B (Cisco), business to consumer or B2C (Amazon), and consumer to consumer or C2C (eBay). also called electronic commerce. M-commerce is a term that is used to refer to the growing practice of conducting financial and promotional activities with the use of a wireless handheld device. The term m-commerce is short for mobile commerce, and recognizes that the transactions may be conducted using cell phones, personal digital assistants and other hand held devices that have operate with Internet access. E-commerce Security is a part of the Information Security framework and is specifically applied to the components that affect e-commerce that include Computer Security, Data security and other wider realms of the Information Security framework. E-commerce security has its own particular nuances and is one of the highest visible security components that affect the end user through their daily payment interaction with business.

Keywords: E-commerce, M-commerce, Advantages of E-commerce and M-commerce, Limitations, Security Issues, M-Commerce Applications.

I. INTRODUCTION

Electronic commerce, or e-commerce, refers to economic activity that occurs online. E-commerce includes all types of business activity, such as retail shopping, banking, investing and rentals. Even small businesses that provide personal services, such as hair and nail salons, can benefit from e-commerce by providing a website for the sale of related health and beauty products that normally are available only to their local customers. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although it may encompass a wider range of technologies such as e-mail, mobile devices social media, and telephones as well. E-commerce differs from e-business in that no commercial transaction, an exchange of value across organizational or individual boundaries, takes place in e-business. The buying and selling of products, services by business and consumers through an electronic medium, without using any paper documents.

Mobile e-commerce, m-commerce is the term used to

describe the growing trend of using networks that interface with wireless devices, such as laptops, handheld computers or mobile phones to initiate or complete online electronic commerce transactions. It May also be seen written as M-commerce or m-commerce. Mobile commerce involves all kind of electronic transactions by the use of mobile phone.

Online shopping or online retailing is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. Alternative names are: e-shop, e-store, Internet shop, web-shop, web-store, online store, and virtual store.

Privacy has become a major concern for consumers with the rise of identity theft and impersonation, and any concern for consumers must be treated as a major concern for e-Commerce providers.

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ATTRIBUTES OF M-COMMERCE:

Ubiquity, Convenience, Interactivity, Personalization, and Localization.

DRIVERS OF M-COMMERCE :Widespread availability of more powerful mobile devices, The handset culture, The service economy, Vendors' push, The mobile workforce, Increased mobility, Improved price and performance, Improvement of bandwidth.

Today, privacy and security are a major concern for electronic technologies. M-commerce shares security concerns with other technologies in the field. Privacy concerns have been found, revealing a lack of trust in a variety of contexts, including commerce, electronic health records, e-recruitment technology and social networking, and this has directly influenced users.

Security Challenges: Less processing power on devices, Slow Modular exponentiation and Primality Checking (i.e., RSA), Crypto operations drain batteries(CPU intensive!), Less memory (keys, certs, etc. require storage) Few devices have crypto accelerators, or support for biometric authentication, No tamper resistance (memory can be tampered with, no secure storage), Primitive operating systems w/ no support for access control (Palm OS).

II. RELATED WORKS

Electronic Commerce is the very rapid growing field in today's scenario. It is used for Purchasing Order i.e. for buying and selling electronic goods and all other type of things. And there is need for development of a number of e-commerce protocols, which ensure integrity, confidentiality, atomicity and fair exchange. [1]

The main difference in M-commerce definition with E-commerce uses the wireless net for performing financial, services and purchases. In other words in M-commerce all kinds of trends such as business-to-consumer, business-to-business and consumer-to-consumer are there. The booming popularity has forced the corporate world to develop a new commerce platform that can reach to masses. Mobile commerce has attracted massive traffic because of its unique characteristics. [2]

Nowadays communication-centric and computing-centric devices are becoming a single intelligent wireless device. Peoples around the world are making use increasingly of electronic communications facilities in their daily lives. This mostly involves interactions between parties who have never formerly met. Consequently, communications networks of all kinds are being exploited in new path to conduct business, to facilitate remote working and to create other "virtual" shared environments. [3]

M-commerce is not possible without a secure environment,

especially for those transactions involving monetary value. Depending on the point of views of the different participants in an m-commerce scenario, there are different security challenges. [4]

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. Within the pass of time the services and ample abilities of M-commerce are getting more popular and more complete than the E-commerce. Generally, M-commerce has several major advantages to consumers [5]

Doing business online is electronic commerce and there are four main areas in which companies conduct business online today: direct marketing, selling and service, online banking and billing, secure distribution of information and value chain trading and corporate purchasing. [6]

E-commerce stands for electronic commerce. E-commerce is improving standard among the business community in worlds, about the opportunities offered by E-commerce. E-Commerce has unleashed yet another revolution, which is changing the way businesses buy and sell products and services. And its trading in goods and services through the electronic medium. [7]

M-commerce has attracted the attention of both practitioners and academics. In particular, research activities on m-commerce have increased significantly after 2000. We believe that m-commerce is becoming increasingly pervasive. There is no doubt that m-commerce research will burgeon in the future. Academics have many avenues for conducting research on m-commerce. [8]

M-commerce is a new area arising from the marriage of electronic commerce with emerging mobile and pervasive computing technology. The newness of this area and the rapidness with which it is emerging makes it difficult to analyze the technological problems that m-commerce introduces and, in particular, the security and privacy issues. [9]

E-commerce concept has changed a way of doing business in a modern world. It is not just electronic payment on the Internet. There are several application areas in this category; like banking activities, publishing including electronic distribution, sales portals covering sales, marketing, production, management, and distribution.

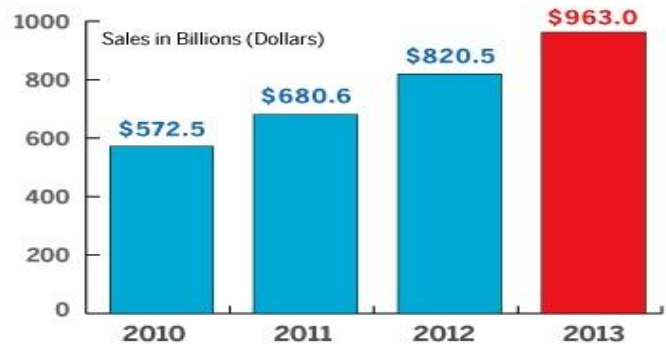
E-Commerce types : Major types of e-commerce can be categorized: • Business to- Consumer (B2C), • Business-to-Business (B2B) , • Consumer-to-Consumer (C2C) • Business-to-Government (B2G) , • Mobile commerce (m-

commerce) [10]

Indian consumers perceive e-banking to be less compatible than do American consumers. First online shopping is, in large part, a solitary activity, which may be at odds with consumers in the more collectivist culture of India. Second, American consumers are more used to engaging in “distant” shopping such as catalog shopping, which has been a fixture in the USA for many decades. Americans may also find credit cards to be more compatible with their experiences. [11]

Without trust, most prudent business operators and clients may decide to forgo use of the Internet and revert back to traditional methods of doing business. The e-commerce industry is slowly addressing security issues on their internal networks. There are guidelines for securing systems and networks available for the e-commerce systems personnel to read and implement. Educating the consumer on security issues is still in the infancy stage but will prove to be the most critical element of the e-commerce security architecture. Trojan horse programs launched against client systems pose the greatest threat to e-commerce because they can bypass or subvert most of the authentication and authorization mechanisms used in an e-commerce transaction. These programs can be installed on a remote computer by the simplest of means: email attachments. [12]

sites which eat up customers’ money. There is no guarantee of product quality. Mechanical failures can cause unpredictable effects on the total processes. As there is minimum chance of direct customer to company interactions, customer loyalty is always on a check. There are many hackers who look for opportunities, and thus an e-commerce site, service, payment gateways, all are always prone to attack.



Global e-commerce sales are growing at more than 19% per year. Source:

[http://en.wikipedia.org/wiki/File:Global_ecommerce_sales.jpg]

III. PURPOSE OF STUDY

- * Study the Overview of E-commerce and M-commerce.
- * Understand the relationship between m-commerce and e-commerce.
- * Discuss the current advantages and disadvantages of E-commerce and M-commerce.
- * Analysis of Global e-commerce sales are growing
- * Analyze of Current Internet Retail Sales by Region: 2005-2015.
- * Identify the M-Commerce Applications
- * Discuss M-COMMERCE VERSUS E-COMMERCE
- * Study of Security Issues in Online marketing

IV. ADVANTAGES AND DISADVANTAGES OF E-COMMERCE

Basic advantages and disadvantages are -
ADVANTAGES: Faster buying/selling procedure, as well as easy to find products. Buying/selling 24/7. More reach to customers, there is no theoretical geographic limitations. Low operational costs and better quality of services. No need of physical company set-ups. Easy to start and manage a business. Customers can easily select products from different providers without moving around physically.

A. DISADVANTAGES OF ECOMMERCE: Any one, good or bad, can easily start a business. And there are many bad



Fig.: Global e-commerce sales by region

[Source: http://en.wikipedia.org/wiki/File:Global_ecommerce_sales_by_region.jpg]



US Retail Ecommerce Sales, by Product Category, 2011-2016

billions

	2011	2012	2013	2014	2015	2016
Computer & consumer electronics	\$42.0	\$49.3	\$56.8	\$66.2	\$76.5	\$87.9
Apparel & accessories	\$37.6	\$45.6	\$54.2	\$64.5	\$75.7	\$87.8
Auto & parts	\$21.6	\$23.7	\$25.5	\$27.8	\$30.5	\$33.5
Books/music/video	\$17.4	\$20.8	\$24.4	\$28.6	\$33.2	\$38.4
Furniture & home furnishings	\$15.1	\$17.7	\$20.2	\$23.3	\$26.9	\$30.9
Toys & hobby	\$9.5	\$11.2	\$13.1	\$15.3	\$17.8	\$20.7
Health & personal care	\$9.3	\$10.9	\$12.5	\$14.4	\$16.5	\$18.8
Office equipment & supplies	\$6.5	\$7.3	\$8.0	\$8.8	\$9.6	\$10.5
Food & beverage	\$4.3	\$5.0	\$5.8	\$6.8	\$8.0	\$9.4
Other	\$31.4	\$34.0	\$38.4	\$40.9	\$44.1	\$47.2
Total	\$194.7	\$225.5	\$258.9	\$296.7	\$338.9	\$384.9

Note: eMarketer benchmarks its retail ecommerce sales figures against US Department of Commerce data, for which the last full year measured was 2012; includes products or services ordered using the internet via any device, regardless of the method of payment or fulfillment; excludes travel and event tickets
 Source: eMarketer, April 2013

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www.eMarketer.com

[Pros and cons are arguments for or against a particular issue. Pros are arguments which aim to promote the issue, while cons suggest points against it.]

B. 36 ADVANTAGES AND DISADVANTAGES OF E-COMMERCE

1. Pro: No Standing in queue or being placed on Hold evermore.

For clientele, this is one of the most popular conveniences of ecommerce.

2. Con: Lack of Personal Touch

I miss the personal touch and relationship that develops with a retail store. In comparison, ecommerce is far more sterile.

3. Pro and Con: Easier to Compare Prices

There are several shopping search engines and comparison shopping websites that help consumers locate the best prices. While buyers love this, sellers find it too restrictive as many of them get filtered out of the consumer's consideration set.

4. Pro: Access to Stores Located Remotely

Especially for people who are not situated in major urban centers, this can be a big advantage. Likewise ecommerce opens new markets for ecommerce businesses.

5. Con: Inability to Experience the Product before Purchase

There are many products that consumers want to touch, feel, hear, taste and smell before they buy. Ecommerce takes away that luxury.

6. Pro: No Need for a Physical Store

Since there is no need for a physical store, ecommerce businesses save on one of the biggest cost overheads that retailers have to bear.

7. Con: Need for an Internet Access Device

Ecommerce can only be transacted with the help of an Internet access device such as a computer or a smartphone.

8. Con: Need for an Internet Connection

Not just does one need an access device; one also needs Internet connectivity to participate in ecommerce.

9. Pro and Con: Common Availability of Coupons and Deals

Though there is nothing about ecommerce that makes it intrinsically oriented to discounts, the way online business has evolved has led to lowered prices online. This is an advantage for the buyer, but a disadvantage for the seller.

10. Pro: Lots of Choices

Since there are no shelf size or store size limitations, ecommerce businesses are able to list many different items.

11. Pro: Stores Are Open All the Time

Eliminating the limitation of store-timings is a big convenience for consumers.

12. Con: Credit Card Fraud

Consumers and businesses alike suffer from credit card fraud. Some doomsayers go so far as to predict that fraud will lead to the demise of online business.

13. Con: Security Issues

Consumers run the risk of identity fraud and other hazards as their personal details are captured by ecommerce businesses. Businesses run the risk of phishing attacks and other forms of security fraud.

14. Pro: Ability to Buy and Sell to Other Consumers

Auction sites and listing sites allow individuals to buy and sell from each other. This opens a whole new paradigm of ecommerce. The most famous enabler of consumer to consumer (C2C) ecommerce is eBay.com.

15. Pro: Instantaneous Purchase of Digital Goods

No longer does one need to go and buy a CD of one's favorite music. Within a few minutes, one can download digital products, such as music, and start using them immediately.

16. Pro: Ability to Have Vendors Bid for Your Business

Online business has opened new vistas for consumers. It is now possible to list your requirements online, and have

suppliers bid for your business.

17. Con: Delay in Receiving Goods

If shopping is about instant gratification, then consumers are left empty-handed for some time after making a purchase on an ecommerce website.

18. Con: Inability to Identify Scams

Consumers are often taken in by fly-by-night ecommerce websites that look good, but are up to no good. Scam artists often accept orders and then disappear.

19. Pro: Not About "Location Location Location"

Conventional wisdom lays a lot of emphasis on the location of the physical store. But ecommerce has liberated businesses from the shackles of location.

20. Pro: Ability to Scale Up Rapidly

Ecommerce businesses are able to scale up easier than physical retailers, as they are not bound by physical limitations. Of course logistics get tougher as one grows. However, with the choice of the right third party logistics provider, one can scale up one's logistics too.

21. Pro: Unlimited Shelf Space

Being liberated from a physical store also entails being liberated from the limitations of shelf space. This allows ecommerce businesses to "stock" a wide range of products.

22. Con: Extraordinarily High Reliance on the Website

For an ecommerce business, its website is everything. Even a few minute of downtime can lead to a substantial loss of money, not to mention customer dissatisfaction.

23. Con: Multiplicity of Regulations and Taxation

Regulators are still not clear about the tax implications of ecommerce transactions. This is especially true when the seller and buyer are located in different territories. This can lead to multiplicity of taxation as well as higher expense on accounting and compliance.

24. Con: Chargeback's

Credit card issuers are quite liberal in permitting chargeback's upon customer request. This puts the ecommerce businesses in a bad position if the goods have already been delivered.

25. Pro: Ease of Communication

Since the ecommerce merchant captures contact information in the form of email, sending out automated and customized emails is quite easy.

26. Pro: Superior Customization

Using cookies and other methods of monitoring a

consumer's behavior, an ecommerce website can customize many aspects of what the consumer sees.

27. Pro: No Need to Handle Currency Notes

In physical stores, many customers pay with currency notes. For a large multi-store retailer, this creates the need for careful cash management. For the tax authority, it creates a problem in being able to accurately evaluate a retailer's earnings. Electronic payments leave a stronger trail, and this helps the retailer as well as the tax authority.

28. Pro: Efficient Procurement

Because the entire supply chain can be interlinked with business to business ecommerce systems, procurement becomes faster, transparent, and cheaper.

29. Pro and Con: Delivery of Each Individual Item

The consumer experiences the convenience of having goods home-delivered. But the logistics involved with delivering each individual item adds substantial strain to the ecommerce business operation.

30. Con: Expense and Expertise Needed for Ecommerce Infrastructure

Substantial information infrastructure is required to run an effective ecommerce website. And when you factor in denial-of-service attacks, the scale of infrastructure needs to be still greater.

31. Pro: Superior Inventory Management

If ecommerce businesses can tune into the order processing systems of their suppliers, they can maintain lower inventories and still not face stock-out situations.

32. Pro: Reduced Employee Costs

Since ecommerce processes are automated to a large extent, fewer employees are required for lower-end jobs. Human resources can be used more effectively for higher-level functions.

33. Pro: Gain Search Engine Traffic

Close to 100% of Internet users also use search engines. With the right ecommerce SEO, search engines can act as a great source of qualified free traffic.

34. Pro: Ability to Sell Low Volume Goods Too

Conventional retail focuses on stocking fast-moving goods. Pricey shelf-space dictates that items that do not move fast should be candidates for removal from the product portfolio. The economics of ecommerce permits selling slow-moving, and even obsolete, products to be included in the catalog.

35. Pro: Ability to Track Logistics

Since effective logistics is the key to a successful ecommerce business, the ability to trigger and monitor logistics online is a valuable tool for the ecommerce business.

36. Con: Need for Expanded Reverse Logistics

In the case of physical retail, customers are usually willing to travel to the retail outlet to return/replace goods if required. But receiving goods back is a bigger nightmare for an e-commerce business. This has led to the growth of the reverse logistics function.

C. Why are we seeing such an interest in online business transactions?

The reason is..... the several e-commerce benefits which is enjoyed by both customers and merchants at the same time, a real win-win situation. Here's a summary of e-commerce benefits for you to view and consider.

- The market for a Web based business is not bound by any geographical constraints. This means lesser or NIL growth inhibitors due to various restrictions existing in different geographical regions.
- The transaction costs go down tremendously in a well set up site. The company saves on the costs of the people needed to interact with the customers, demonstrate the wares time and again, and take orders. All this gets automated online.
- Better, more inviting, convenient and comprehensive presentation of goods is conducive to greater sales. For instance, if you are at Amazon, you can take a look at what other people who ordered a book also purchased.
- Facilities such as being able to compare costs of several stores at the same time, keep a tab on your selections, the flexibility of being able to add, remove, and even come back later to carry on choosing instead of closing the deal in one online session itself are quite convenient to a customer.
- The Web business can be integrated into the regular business cycle and give customers more information than ever before. For instance, customers at Dell can see exactly at what stage their order is, at any given point of time.
- Improved customer interaction, at practically no cost, is a big asset to the company. Keeping clients happy has now become much more economical for the companies through their websites. By putting information on frequently asked questions on their website, organizations are saving costs by reducing the number of customer service representatives. Eventually which means that, the benefits of saved costs will be passed on to the customers -- lowering costs at the other end of connection, too?
- More convenient and easy business to business or "B2B" e-commerce where companies buy from each other. For instance, a garment wholesaler may sell to a chain of retail shops, or an automobile manufacturer may shop around for thousands of car parts from suppliers online.

- Small and large firms alike have the opportunity to set-up and conduct business on the internet. The barriers to entry to the e-commerce are miniscule.
- An inexpensive advertising medium for organizations, it allows organizations an opportunity for publicizing their products and services at minimal cost.
- Helps expand into new markets by virtue of its global reach. Open your product and services to a new customer base and to maintain a leading edge technology position and image in the market place and against your competitors.

All these e-commerce benefits are being gradually recognized the world over. Most of the businesses, big or small, are now setting up bases on the internet to reap the benefits of this golden era of e-commerce.

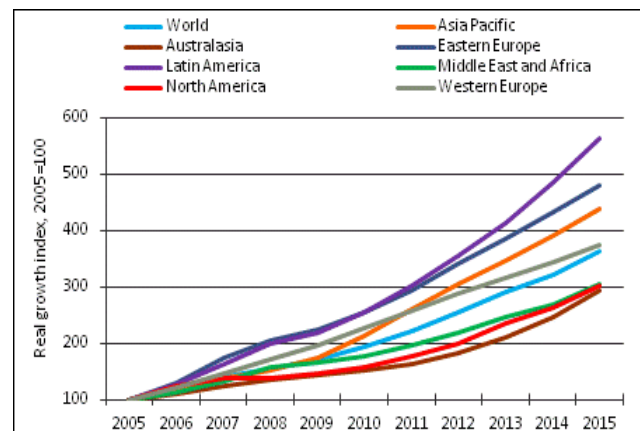
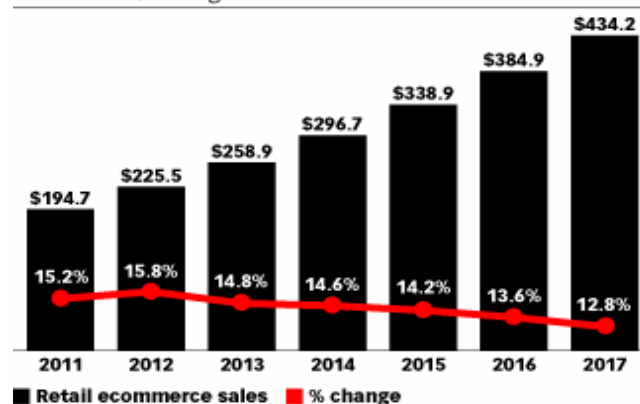


Fig.: Internet Retail Sales by Region: 2005-2015
 Real growth index; 2005=100

Source: Euromonitor from trade sources/national statistics.

US Retail Ecommerce Sales, 2011-2017
 billions and % change



Note: eMarketer benchmarks its retail ecommerce sales figures against US Department of Commerce data, for which the last full year measured was 2012; includes products or services ordered using the internet via any device, regardless of the method of payment or fulfillment; excludes travel and event tickets
 Source: eMarketer, April 2013

D. Disadvantages and Constraints:

Some disadvantages and constraints of e-commerce include the following.

Time for delivery of physical products

It is possible to visit a local music store and walk out with a compact disc, or a bookstore and leave with a book. E-commerce is often used to buy goods that are not available locally from businesses all over the world, meaning that physical goods need to be delivered, which takes time and costs money. In some cases there are ways around this, for example, with electronic files of the music or books being accessed across the Internet, but then these are not physical goods.

Physical product, supplier & delivery uncertainty

When you walk out of a shop with an item, it's yours. You have it; you know what it is, where it is and how it looks. In some respects e-commerce purchases are made on trust. This is because, firstly, not having had physical access to the product, a purchase is made on an expectation of what that product is and its condition. Secondly, because supplying businesses can be conducted across the world, it can be uncertain whether or not they are legitimate businesses and are not just going to take your money. It's pretty hard to knock on their door to complain or seek legal recourse! Thirdly, even if the item is sent, it is easy to start wondering whether or not it will ever arrive.

Perishable goods

Forget about ordering a single gelato ice cream from a shop in Rome! Though specialised or refrigerated transport can be used, goods bought and sold via the Internet tend to be durable and non-perishable: they need to survive the trip from the supplier to the purchasing business or consumer. This shifts the bias for perishable and/or non-durable goods back towards traditional supply chain arrangements, or towards relatively more local e-commerce-based purchases, sales and distribution. In contrast, durable goods can be traded from almost anyone to almost anyone else, sparking competition for lower prices. In some cases this leads to disintermediation in which intermediary people and businesses are bypassed by consumers and by other businesses that are seeking to purchase more directly from manufacturers.

Limited and selected sensory information

The Internet is an effective conduit for visual and auditory information: seeing pictures, hearing sounds and reading text. However it does not allow full scope for our senses: we can see pictures of the flowers, but not smell their fragrance; we can see pictures of a hammer, but not feel its weight or

balance. Further, when we pick up and inspect something, we choose what we look at and how we look at it. This is not the case on the Internet. If we were looking at buying a car on the Internet, we would see the pictures the seller had chosen for us to see but not the things we might look for if we were able to see it in person. And, taking into account our other senses, we can't test the car to hear the sound of the engine as it changes gears or sense the smell and feel of the leather seats. There are many ways in which the Internet does not convey the richness of experiences of the world. This lack of sensory information means that people are often much more comfortable buying via the Internet generic goods - things that they have seen or experienced before and about which there is little ambiguity, rather than unique or complex things.

Returning goods

Returning goods online can be an area of difficulty. The uncertainties surrounding the initial payment and delivery of goods can be exacerbated in this process. Will the goods get back to their source? Who pays for the return postage? Will the refund be paid? Will I be left with nothing? How long will it take? Contrast this with the offline experience of returning goods to a shop.

Privacy, security, payment, identity, contract.

Many issues arise - privacy of information, security of that information and payment details, whether or not payment details (eg credit card details) will be misused, identity theft, contract, and, whether we have one or not, what laws and legal jurisdiction apply.

Defined services & the unexpected .

E-commerce is an effective means for managing the transaction of known and established services, that is, things that are everyday. It is not suitable for dealing with the new or unexpected. For example, a transport company used to dealing with simple packages being asked if it can transport a hippopotamus, or a customer asking for a book order to be wrapped in blue and white polka dot paper with a bow. Such requests need human intervention to investigate and resolve.

Personal service

Although some human interaction can be facilitated via the web, e-commerce cannot provide the richness of interaction provided by personal service. For most businesses, e-commerce methods provide the equivalent of an information-rich counter attendant rather than a salesperson. This also means that feedback about how

people react to product and service offerings also tends to be more granular or perhaps lost using e-commerce approaches. If your only feedback is that people are (or are not) buying your products or services online, this is inadequate for evaluating how to change or improve your e-commerce strategies and/or product and service offerings. Successful business use of e-commerce typically involves strategies for gaining and applying customer feedback. This helps businesses to understand, anticipate and meet changing online customer needs and preferences, which is critical because of the comparatively rapid rate of ongoing Internet-based change.

Size and number of transactions

E-commerce is most often conducted using credit card facilities for payments, and as a result very small and very large transactions tend not to be conducted online. The size of transactions is also impacted by the economics of transporting physical goods. For example, any benefits or conveniences of buying a box of pens online from a US-based business tend to be eclipsed by the cost of having to pay for them to be delivered to you in Australia. The delivery costs also mean that buying individual items from a range of different overseas businesses is significantly more expensive than buying all of the goods from one overseas business because the goods can be packaged and shipped together.

V. ADVANTAGES AND DISADVANTAGES OF M- COMMERCE

M-Commerce is a part of e-commerce which is done through mobile phones. It allows the person to do the transaction through mobile phones. It gives each and every person a choice to shop from anywhere. It is a way by which companies and sellers come closer to the end user. Though there are many similarities, there are many differences between m-commerce and e-commerce, such as :-

- * Internet connectivity is always needed in e-commerce but m-commerce does not have such boundaries.
- * Video conferencing can also be done through m-commerce but it is not possible in e-commerce.
- * Electricity is also one of the factor of necessity which is not one in m-commerce.
- * M-commerce is costlier than e-commerce.
- * M-commerce is much easier than e-commerce.
- * Providing wider reach
- * Reducing transaction cost
- * Streamline business processes
- * Competitive pricing
- * Reducing time to order

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- * The age of mobile shopping is here to stay, consumers can access millions of products at the palm of their hands and retailers can increase their reach and overall sales
- * Use of graphics unlimited
- * Unlimited bandwidth
- * WAP and SMS unlimited to small number of characters and text.
- * More functionality for mobile Internet over mobile phones and existing generation of handhelds than for mobile computers.
- * Small screens of most devices still unlimited types of file and data transfer.
- * The good news is that these mobile sites are an addition of your current contribution but they can also locate on their own.
- * The mobile sites can be foundation from the same database that your are performing now to make their management very straightforward.
- * New advanced mobile applications characteristically engage high-speed services being accessed by devices distantly, anywhere, at any time.
- * M-commerce requests to eradicate even further the Intelligence of a consumer having to go to the business for Products or services, or requiring to be skilled in multiple Technologies or having to preparation whenever they want to contact a business using the Internet.
- * To allow the development of customer use of data options m-commerce applications and technology that have evolved quickly.

A. Below are some of these advantages:

Convenience

It is a true convenience to do much from a handy device via M-Commerce. With wherever you are, in just a few clicks on your mobile device, you can already do shopping, banking and download media files.

Flexible Accessibility

User can be accessible via mobile phones and at the same time be accessible online too through logging on to various mobile messengers like Yahoo and Gtalk and other networking platforms. On the other hand, user may also choose not to be accessible by shutting down his mobile device, which at times can be a good thing.

Easy Connectivity

As long as the network signal is available, mobile devices can connect and do commerce transactions, mobile to mobile and even mobile to other devices. No need for modem or WI-FI connectivity set up.

Personalization

Each mobile device is usually dedicated to a specific user, it is personal. You can do whatever you want to your mobile device, modify the wallpaper, change view settings or modify contact information as you send emails or e-payments.

Time Efficient

Doing M-Commerce transactions do not require the user to plug anything like personal computer or wait for the laptop to load. Just hit the on button of your mobile device and your ready to go.

B. The disadvantages of m-commerce.

- * Technology constraints of mobile devices (memory, Processing power, display capabilities, input methods).
- * User interface is often difficult to learn how to use.
- * Use of graphics limited
- * WAP and SMS limited to small number of characters and Text.
- * Limited bandwidth
- * Small screens of most devices still limit types of file and data transfer .
- * WAP and SMS limited to small number of characters and text.
- * Cost of establishing mobile and wireless broadband Infrastructure.
- * Small screens of most devices still limit types of file and data transfer (i.e. streaming videos, etc.)
- * Standards guiding applications and technology development and connection(s)
- * WAP and SMS limited to small number of characters and text.
- * Use of graphics limited.
- * Less functionality for mobile Internet over mobile phones and existing generation of handhelds than for mobile computers (laptops and next generation handhelds).
- * User interface is often difficult to learn how to use
- * Limited bandwidth.
- * Limited roll out of higher bandwidth mobile networks and devices (i.e. 3g networks and wireless broadband networks are predominantly located in cities).
- * Cost of establishing mobile and wireless broadband Infrastructure.
- * Technology constraints of mobile devices (memory, processing power, display capabilities, input methods).
- * Security of data moved across some mobile and wireless networks.

* Businesses investment in hardware and infrastructure is seen as riskier as rapid evolution of mobile and wireless technologies continues.

VI. AREAS / USES OF M-COMMERCE

In the current commerce industry, mobile commerce or M-Commerce has been entered in finance, services, retails, telecommunication and information technology services. In these sectors, M-Commerce is not only being widely accepted but also it is being more used as a popular way of business/ commerce.

- Finance Sectors
- Telecommunication Sectors
- Service / Retail sectors
- Information Sector

Classes of M-Commerce Applications

Class of Applications	Examples
Mobile financial applications (B2C, B2B)	Banking, brokerage, and payments for mobile users
Mobile advertising (B2C)	Sending user-specific and location-sensitive advertisements to users
Mobile inventory management (B2C, B2B)	Location tracking of goods, boxes, troops, and people
Proactive service management (B2C, B2B)	Transmission of information related to distributing components to vendors
Product locating and shopping (B2C, B2B)	Locating/ordering certain items from a mobile device
Wireless reengineering (B2C, B2B)	Improvement of business services
Mobile auction or reverse auction (B2C)	Services for customers to buy or sell certain items
Mobile entertainment services (B2C)	Video-on-demand and other services to a mobile user
Mobile office (B2C)	Working from traffic jams, airport, and conferences
Mobile distance education (B2C)	Taking a class using streaming audio and video
Wireless data center (B2C, B2B)	Information can be downloaded by mobile users/vendors
Mobile music/music-on-demand (B2C)	Downloading and playing music using a mobile device

Source: U. Varshney and R. Vetter, "Recent Advances in Wireless Networking," IEEE Computer, June 2000. © 2000 IEEE.

VII. M-COMMERCE APPLICATIONS

The general m-commerce applications are:

- Mobile ticketing
- Mobile vouchers, coupons and loyalty cards
- Content purchase and delivery
- Location-based services
- Information services
- Mobile Banking

- Mobile brokerage
- Auctions
- Mobile purchase
- Mobile marketing and advertising

VIII. M-COMMERCE VERSUS E-COMMERCE

In comparison to e-commerce, m-commerce offers both advantages and disadvantages. The following list summarizes the advantages of m-commerce:

Ubiquity: The use of wireless device enables the user to receive information and conduct transactions anywhere, at anytime.

Accessibility: Mobile device enables the user to be contacted at virtually any time and place. The user also has the choice to limit their accessibility to particular persons or times.

Convenience: The portability of the wireless device and its functions from storing data to access to information or persons.

Localization: The emergence of location-specific based applications will enable the user to receive relevant information on which to act.

Instant Connectivity (2.5G...): Instant connectivity or "always on" is becoming more prevalent will the emergence of 2.5 G... networks, GPRS or EDGE. Users of 2.5 G services will benefit from easier and faster access to the Internet.

Personalization: The combination of localization and personalization will create a new channel/business opportunity for reaching and attracting customers. Personalization will take the form of customized information, meeting the users' preferences, followed by payment mechanisms that allow for personal information to be stored, eliminating the need to enter credit card information for each transaction.

Time Sensitivity – Access to real-time information such as a stock quote that can be acted upon immediately or a sale at a local boutique.

Security – depending on the specific end user device, the device offers a certain level of inherent security.

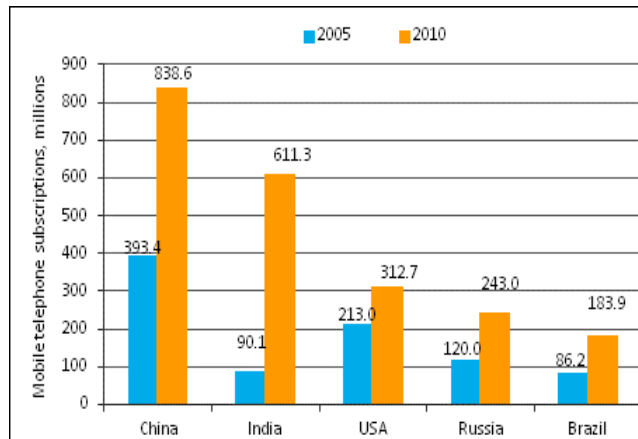


Fig.: World's Largest Markets for Mobile Telephone Subscriptions: 2005-2010

Source: International Telecommunications Union/World Bank/Trade Sources/Euromonitor International

IX. SECURITY ISSUES

E-commerce security is the protection of e-commerce assets from unauthorized access, use, alteration, or destruction.

While security features do not guarantee a secure system, they are necessary to build a secure system.

Security features have four categories:

- **Authentication:** Verifies who you say you are. It enforces that you are the only one allowed to logon to your Internet banking account.
- **Authorization:** Allows only you to manipulate your resources in specific ways. This prevents you from increasing the balance of your account or deleting a bill.
- **Encryption:** Deals with information hiding. It ensures you cannot spy on others during Internet banking transactions.
- **Auditing:** Keeps a record of operations. Merchants use auditing to prove that you bought a specific merchandise.
- **Integrity:** prevention against unauthorized data modification
- **Nonrepudiation:** prevention against any one party from reneging on an agreement after the fact
- **Availability:** prevention against data delays or removal.

X. CONCLUSION

E-commerce is widely considered the buying and selling of products over the internet, but any transaction that is completed solely through electronic measures can be considered e-commerce. Day by day E-commerce and M-commerce playing very good role in online retail marketing and peoples using this technology day by day increasing all

over the world. Mobile commerce involves all kind of electronic transactions by the use of mobile phone. M-Commerce is the term for making business transactions using mobile devices. There are already several existing M-Commerce applications and services nowadays that have been very helpful to us. Some are mobile banking, location maps, and variety of news, mobile shopping, ticketing and mobile file sharing. E-commerce security is the protection of e-commerce assets from unauthorized access, use, alteration, or destruction. Dimensions of e-commerce security; Integrity: prevention against unauthorized data modification, No repudiation: prevention against any one party from reneging on an agreement after the fact. Authenticity: authentication of data source. Confidentiality: protection against unauthorized data disclosure. Privacy: provision of data control and disclosure. Availability: prevention against data delays or removal. And analysis of this E and M-commerce retail marketing growth had shown in the figures.

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