

## ENHANCING CONSUMER EXPERIENCE THROUGH MOBILE COMMERCE: CHALLENGES AND OPPORTUNITIES

**M. Moses Antony RAJENDRAN**

Loyola College, Chennai, India

[moses@loyolacollege.edu](mailto:moses@loyolacollege.edu)

**D.Vinoth KUMAR**

Bharthidhasan University Constituent College, India

[mathasonvino@gmail.com](mailto:mathasonvino@gmail.com)

**Alexandru-Mircea NEDELEA**

Stefan cel Mare University of Suceava

[alexandru.nedelea@usm.ro](mailto:alexandru.nedelea@usm.ro)

### Abstract

*During this information technology era, mobile commerce is succeeding very easily especially Covid-19 pandemic timings. This article is mentioned about commerce, mobile, mobile commerce, users of e-commerce, Users of Mobile Commerce, Holistic Points, Classification of Mobile Commerce, Mobile Commerce Applications, Five Stages in Systems Development Life Cycle for mobile commerce applications, Data Flow Diagrams - Some general guidelines for developing DFDs, Why documentation is important for mobile development?. Cloud Computing, Cloud Computing models, Advantages of Cloud Computing, Disadvantage of Cloud Computing, Influence of cloud computing upon E-commerce, Advantage of cloud computing in E-commerce, All about The Advantages And Disadvantages Of Online Learning, Challenges of Mobile Commerce, E-Commerce will change in the next 5 years in India, Opportunities in (or applications of) M-Commerce, Application of M-Commerce, Opportunities for M-Commerce and Conclusion.*

**Key words:** *consumer experience, mobile commerce*

**JEL Classification:** *L81, M39, B17*

## I. INTRODUCTION

**Commerce** Buying and selling is the meaning of commerce. To do commerce we need different fields of study. They are accounting, finance, marketing, management, co-operative, economics, trade, logistics, and tourism. These are all interchanged in cross functional ways. In these technology eras, the business is done very simply and effective way by using the mobile phone. It is working and functioning effectively very usefully because of hardware, software and networking facilities of computer technology however still there are challenges are taking place to do the business on.

**Mobile** Here, mobile means mobile phones which are all manufactured by different companies with the wireless connectivity. It needs hardware, software and networking facilities to perform for the business purposes.

**Mobile Commerce** Buying and selling of goods and services using electronic devices/media through computer networking technology is called e-commerce. Tim Berners Lee is the father of electronic sheet i.e. web page. Inheriting the ideas of them has been established mobile commerce. Mobile Commerce helps for 231 countries and whole populations of mobile users in the world. Mobile commerce can be in different perspectives. They are communication perspective, commercial perspective, business perspective, service perspective, learning perspective, collaborative perspective and community perspective which are all electronically established through mobile phones.

## II. USERS OF MOBILE COMMERCE

The users of mobile commerce are financial institutions, standard bodies, industries, educational institutions, vendors of internet commercial products, internet users, internet service providers, Governments, research department, telephone department, legal department etc.

**Holistic Points** It is a Covid-19 business strategy, technology uses to achieve business goals, building of internal and external business relationships, evolution in the way companies use internet by understanding the situation of covid-19, providing information to facilitate delivery of goods and services and supporting change initiatives and reinforces business process re-engineering, supply chain management, enterprise resource planning,

online analytical data processing, data mining, data mart, data warehousing, online transaction data processing and management systems.

**Classification of Mobile Commerce** The mobile commerce can be classified as business to business, business to consumer, business to business to consumer, consumer to business, consumer to consumer, peer to peer applications, intra business mobile commerce, business to employees, collaborative commerce, e-learning, exchange to exchange and e-Government.

**Mobile Commerce Applications** Any application used it for business through mobile is called mobile commerce too. These applications can be designed using by scientific languages like C, C++, Java etc. and business languages like V.B., Oracle, SAP, developer 2000, My SQL, SQL server, PERIL, Cobol, FoxPro etc. The applications are working through cloud computing.

Companies change their systems for a variety of reasons. They are,

- ✓ To respond to changes in user needs or business needs during Covid-19 block down.
- ✓ To take advantage of or respond to technology changes (cloud computing)
- ✓ To accommodate improvements in their business process
- ✓ To gain a competitive advantage and/or lower costs
- ✓ To increase productivity
- ✓ To accommodate growth
- ✓ To accommodate downsizing or distribute decision making
- ✓ To replace a system that is aged and unstable

**Five Stages in Systems Development Life Cycle for mobile commerce applications.**

- Systems analysis
- Conceptual Design
- Physical Design
- Implementation and Conversion
- Operation and Maintenance

**Why documentation is important for mobile development?**

It explains step by step procedures systematically and meaningfully for the development of wireless business places around the world of 231 countries. So, documentation is very essential.

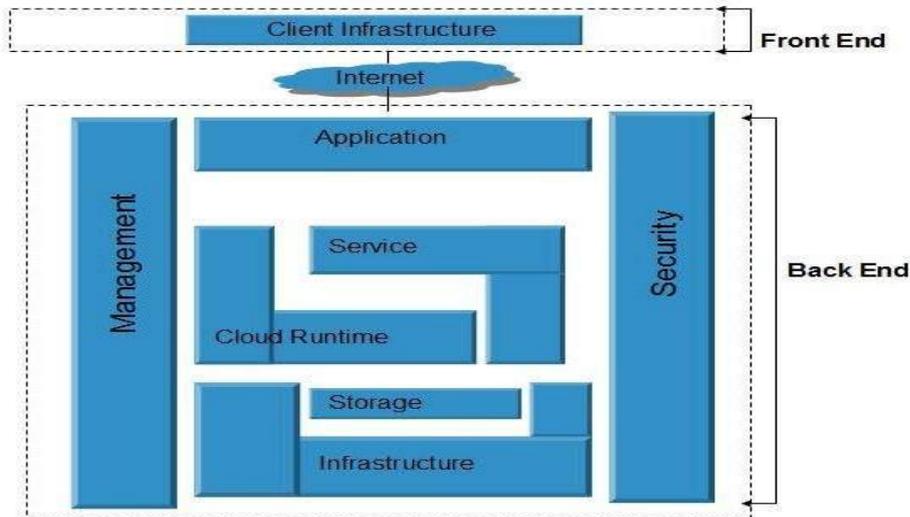
**Data Flow Diagrams- Some general guidelines for developing DFDs are:**

*Understand the system, ignore certain aspects of the system, determine system boundaries, develop a context diagram, identify data flows, group data flow, identify transformation processes, group transformation processes, identify all files or data stores, identify all data sources and destinations, naming all DFD elements, subdividing of the DFD, giving each process a sequential number, repeating the process and preparing a final copy.*

**Cloud Computing** The essential of these days business the cloud computing technology is coping with the mobile commerce in terms of various information technologies for the development of the business.

**Cloud** The term Cloud refers to Network or Internet. Cloud is something which is present at a remote location. Cloud can provide services over network. Applications such as e-mail, Web conferencing, CRM, movies database all run in cloud.

**ARCHITECTURE OF CLOUD COMPUTING FOR MOBILE**



**Front End** The front end refers to the client i.e mobile user's part of cloud computing system. It consists of interfaces and applications that are required to access the cloud computing platforms, Example - Web Browser.

**Back End** The back End refers to the cloud itself. It consists of all the resources required to provide cloud computing services. It comprises of huge data storage, virtual machines, security mechanism, services, deployment models, servers, etc.

### III. CLOUD COMPUTING MODELS

#### 1. Deployment model

#### 2. Service model

##### a. Deployment model

- Deployment model defines the type of access to the cloud, i.e., how the cloud is located?
- There are Four type of deployment model:
  - ✓ Public cloud
  - ✓ Private cloud
  - ✓ Hybrid cloud
  - ✓ Community cloud

##### Benefits of public cloud

- ✓ Cost effective
- ✓ Reliability
- ✓ Flexibility
- ✓ Location independence
- ✓ Utility style costing
- ✓ High scalability

##### Private cloud

Private Cloud allows systems and services to be accessible within an organization.

##### Benefits of private cloud

- ✓ Higher security and privacy
- ✓ More control
- ✓ Cost and energy efficiency
- ✓ Improved reliability

##### Hybrid cloud

- Hybrid Cloud is a mixture of public and private cloud. Non-critical activities are performed using public cloud while the critical activities are performed using private cloud.

##### Community cloud

- Community Cloud allows system and services to be accessible by group of organizations.
- It shares the infrastructure between several organizations from a specific community. It may be managed internally by organizations or by the third-party

##### b) ii. Cloud service models

- ✓ Infrastructure-as-a-Service(IaaS)
  - ✓ Platform-as-a-Service(PaaS)
  - ✓ Software-as-a-Service(SaaS)
- Infrastructure-as-a-Service
- Infrastructure-as-a-Service provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.
  - All of the resources are made available to end user via server virtualization. Moreover, these resources are accessed by the customers as if they own them.

##### Platform-as-a-Service

- Platform-as-a-Service offers the runtime environment for applications.
- It also offers development and deployment tools required to develop applications.
- PaaS has a feature of point-and-click tools that enables non-developers to create web applications.
- App Engine of Google and Force.com are examples of PaaS offering vendors.
- Developer may log on to these websites and use the built-in API to create web-based applications.

##### Software-as-a-Service (SaaS)

- Software-as-a-Service (SaaS) model allows to provide software application as a service to the end users. It refers to a software that is deployed on a host service and is accessible via Internet. There are several SaaS applications listed below:
- Billing and invoicing system

- Customer Relationship Management (CRM) applications
- Help desk applications
- Human Resource (HR) solutions
- Some of the SaaS applications are not customizable such as Microsoft Office Suite. But SaaS provides us Application Programming Interface (API), which allows the developer to develop a customized application.

**Cloud computing in day to day life****Advantages of cloud computing**

- Lower Computing Cost
- Improved Performance
- Reduced Software Cost
- Instant Software Updates
- Unlimited Storage Capacity
- Increased Data Reliability
- Universal Document Access
- Easier Group Collaboration
- Device Independent

**Disadvantage of Cloud Computing**

- Requires Internet Connection
- Does not work well with low speed internet connection
- Stored data can be lost
- Stored data might not be secure
- Features might be limited

**Influence of cloud computing upon e-commerce**

- Cloud computing enables E-commerce enterprises to rent rather than purchase software and hardware
- By virtue of the cloud computing platform and E-Commerce enterprise can choose and rent IT products and services based on its demand and so establish the technical architecture
- Cloud computing can provide economical dependable E-commerce System, SaaS provides such services.
- Cloud computing can provide good economic efficiency for the application of business enterprise E-commerce.

**Advantage of cloud computing in e-commerce**

- It's Virtual
- It can be secured easily
- Its flexible and Scalable
- It can be affordable
- It can help increase profit
- It can help organization do business 24/7
- It increases flexibility and ease of shopping for the customer

**Opinion about mobile commerce**

Digital Learning Day has become DLDay—an online celebration where educators share great ideas, amazing stories, and promising practices through social media and within their own schools and communities.

**All about The Advantages And Disadvantages Of Online Learning**

Nowadays, online learning turns out to be more and more practiced. Many traditional universities started to share their courses online for free. It represents an easy and comfortable method to achieve knowledge in almost every field, from law and accounting, to human sciences, such as psychology and sociology or history. Online learning is a great alternative to traditional universities, especially for people who can't afford the time and money to take real courses. But what are the advantages and disadvantages of online learning?

**Advantages of Online Learning**

Although many people still consider traditional universities as the best way to achieve knowledge and get a diploma, online learning proves to be a great alternative. Students have the chance to study in their own time and especially for free. It represents a great way to study many fields and to boost the level of self-motivation. Online learning is so effective because students can finish their homework quickly, and there is more time left for hobbies or for finding a job.

An access to all resources of a traditional course helps participants learn wherever they are, leaving them the freedom to choose the time for study. With basically an Internet connection, a person can attend different courses. Among the advantages of online learning there are the responsibility and self-discipline of students.

**Disadvantages of Online Learning**

Only in a small group a person can develop properly. At school, students learn how to make friends, be patient, get rid of disappointment, and especially to compete. Competition between colleagues can be very stimulating and students will only benefit from it. Online learning cannot offer human interaction.

Another disadvantage refers to the fact that online courses cannot cope with thousands of students that try to join discussions. Also, online learning can be difficult, if it is meant for disciplines that involve practice.

In conclusion, online learning should be seen as a complement and extension of classical forms of learning. Not even the best online course can fully replace the personal contact with a teacher, or the human relationships that develop in a group. So, traditional classes shouldn't be replaced with online learning.

#### **IV. CHALLENGES OF MOBILE COMMERCE**

##### Data Privacy Day 2021

Data privacy or information privacy is a branch of data security concerned with the proper handling of data – consent, notice, and regulatory obligations. More specifically, practical data privacy concerns often revolve around: Whether or how data is shared with third parties.

The Internet has blurred the lines between real world and the virtual one. Technology is barreling into our hands through smart phones at an unbelievable pace. This is good for productivity and progress, but it makes it easy for thieves to do their job.

The anonymity and location independence that comes with the Internet muddles the moral character of even the most ethical person. There's no assuming your phone and the information it stores is safe from the malicious intentions of the human mind.

Remember, the first line of defense in protecting your data is you. Learn about new threats, stay current and take the necessary precautions to keep your data safe. Here are ten tips that will give you some insight into keeping your devices safe:

1. Create strong passwords and change them often. Never save passwords on your device. Yes, it's convenient. Yes, it saves time. If you need to safely store passwords, look into a secure password manager. Criminals are getting smarter and need just one chink in the armor to get into the system to rob you blind.
2. Be conscious of privacy settings. Most apps offer privacy settings for users. This gives you the freedom to know how much and what kind of information is shared. Always choose the least amount of data sharing.
3. Obtain reliable security for your phone. Phones need as much protection as any other device, if not more. There are many security providers that offer free services. These can be risky as they mine data from your phone. Always go for a well-known service provider. Norton Mobile Security has a gamut of features that can protect your phone from most threats.
4. Back up your data via reliable hardware or software. Backing up data is often overlooked, but remains a very important aspect of data protection. Ransom ware is a type of attack where hackers hold your data hostage for a ransom. There are cloud-based services that offer backup, or you can opt for Norton Security Premium, which includes backup capabilities.
5. Anti-theft your device. If your gadget is lost or stolen, tracking apps will help you find it. But how do you protect your confidential data before it gets into the wrong hands? Norton Mobile Security allows you to perform a "factory reset" to completely erase your lost/stolen Android device. This includes your confidential contact lists, text messages, call history, browser history, bookmarks and any other personal data.
6. Be careful what you do with your phone, and use a password. Entering a password every time you want to use your phone may be tedious, but it's also the first line of defense if your phone gets lost or stolen. Additionally, when you consider the vast amount of malware, Trojans and worms finding sneaky ways to get into your device, it is better to stay protected with a security system that does the work for you. App Advisor is a special feature provided by Norton Mobile Security. It prompts privacy risks, intrusive behavior of apps, excessive battery drainage and data plan usage.
7. Watch out for Bluetooth vulnerabilities. Bluetooth technology offers incredible convenience. It also opens doors for security weaknesses. Make sure you turn off your Bluetooth when you are not using it. While there are options to place your Bluetooth activity in an invisible or undetectable mode, there are some malicious apps that can change that mode and expose your device to threats. That's one more reason to have a security system in place.
8. Keep your operating system up to date. "A hindrance" is what many people call operating system updates. They are annoying and sometimes time-consuming but are very important. Besides improving the functionality of the device, updates and patches contain critical security updates. Make it a point to update as soon as possible.

9. Beware of public Wi-Fi. Most home Wi-Fi connections are encrypted. Some public Wi-Fi connections are not. This means you're at risk of people monitoring your online activity. Sometimes, malware from someone else's device can infect your device.
10. Close down any online service that you no longer use. There are many social networks that come and go. If you have signed up for any of these, they may have a wealth of your personal information that you willingly gave. But eventually when these services disappear, they take with them your information that can be sold as an asset.

No protection method is 100% foolproof, but there's clearly plenty you can do to keep your information safe. Educate yourself on the latest security tactics and tricks, use good 'ol common sense, and use Norton's advanced protection products to protect what's yours

Study found that the lack of trust and literacy are the two major challenges of m-commerce growth in Bangladesh. Stakeholders need to make strategic plans to deal with these challenges and opportunities for rapid uptake of m-commerce in Bangladesh.

M-commerce is considered to be a subset of e-commerce, sometimes it is called as mobile e-commerce Donegan, Liebmann, Schwartz cited in Zhang and Yuan [2]. Whenever e-commerce transactions are made through mobile phone or any handheld devices it is called m-commerce Chan and Fang, Kannan et al., Varshney et al., cited in Chan, Fang and Brzezinski [3].

E-Commerce will change in the next 5 years in India.

- ✓ Enhanced retail experiences. Virtual reality can be a boon to the industry.
- ✓ Everything on mobile. E-Commerce will basically shift towards the handheld devices because the traffic on sites from mobiles is 10 times greater than that on desktops.
- ✓ Touch-based experiences.
- ✓ Voice assistants
- ✓ Better governance
- ✓ Automatic delivery.

#### **Opportunities in (or applications of) M-Commerce:**

M-Commerce offers business enterprises the greatest growth opportunities since the dawn of WWW. i.e. World Wide Web (WWW is a multi-media system of sound, pictures and video for finding information on the internet). Through M-Commerce, business enterprises can access new customers who would never have used a computer. The scope of possibilities for M-Commerce application is very vast.

#### **Application of M-Commerce:**

##### **Some applications of M-Commerce may relate to fields like:**

1. Mobile banking
2. Stock market reports
3. E-Bills
4. E-Salaries
5. Booking functions
6. Placing and paying for orders, on fly.
7. Auctions
8. Retailing
9. Advertising etc.

## **V. OPPORTUNITIES FOR M-COMMERCE**

#### **Increasing numbers:**

While PCs/Laptops have been there for close to four decades, they haven't surpassed the one billion mark. By the end of 2016, there would be more than 2 billion Smartphone users in the world. People are increasingly spending their time on smartphones and tablets and this explains the shift in focus towards M-Commerce among store owners.

#### **Personalized Experience:**

With Smartphone apps, stores are able to offer a more personalized experience to their customers compared to desktop based interface. This personalized experience results in higher conversion rates and translates into more sales and revenue for the store. Unlike desktops/tops which are often shared devices, smart phones are single-owner devices, hence allows stores to offer a completely tailored experience.

#### **Location Based target:**

M-Commerce allows geo-targeting that has helped service providers such as travel and hospitality sites offer customized offerings to their clients based on their present location. This increases the value being offered to the clients as a part of their services. This has created many new opportunities for the online retailers as they can offer real-time deals to their clients.

## VI. CONCLUSION

The mobile internet has opened up new possibilities for the business. Telecommunication industry and the business world are seeing M-Commerce as a main focus for the future. There is a big difference between what the technology can do today and what the consumer has been led to expect.

The introduction of faster mobile internet technologies such as 5G, 4G, 3G and improved security, such as firewalls, SSL, Data encryption techniques have resulted in the rapid growth of M-Commerce in India. M-Commerce players will need to move fast to improve the user interface and offer innovative pricing structures. Despite so many downfalls in the past, mobile applications are becoming an important part in lives. Mobile commerce is the next big thing in the world of Indian web commerce.

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