

# Mobile Commerce and Its Comparison with E-Commerce

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**Abstract:** Gone are the days when customers queued in front of retail stores or cash counters to purchase a book or a movie ticket. With the emergence of the 21<sup>st</sup> century consumers have adopted easier and more convenient ways of shopping. They have responded to the technological advancement by demanding for more convenience and ease. The transition from in-store shopping to online shopping has taken centuries, but the shift (partial) from electronic commerce (e-commerce) to Mobile Commerce (M-Commerce) has merely happened within a decade or two. In this paper we try to provide an overview of the fundamentals about M-Commerce and e-commerce. This paper attempts to help business managers, particularly those without IT background, to understand the key elements and basic issues of M-Commerce and to assess the impact of M-Commerce on current and future businesses as well as to identify new business prospects. This paper highlights the Business Model, applications of M-Commerce. Mobile advertising and its benefits are also discussed in this paper. Finally, Mobile Payment Methods and Challenges for M-Commerce are also listed in this paper.

**Keywords:** M-Commerce, E-Commerce, Business Models, Mobile Advertising, Mobile Payment Methods

## I. INTRODUCTION

M-Commerce (Mobile Commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs). Mobile Commerce transactions continue to grow, and the term includes the purchase and sale of a wide range of goods and services, online banking, bill payment, information delivery and so on.

The range of devices that are enabled for Mobile Commerce is growing, having expanded in recent years to include smart phones and tablet computers. The increasing adoption of electronic commerce provided a strong foundation for Mobile Commerce.

The rapid growth of Mobile Commerce is being driven by a number of positive factors - the demand for applications from an increasingly mobile customer and consumer base; the rapid adoption of online commerce; and technological advances that have given wireless handheld devices advanced capabilities and substantial computing power.

## II. OBJECTIVES OF THE STUDY

- To provide an overview of the fundamentals about M-Commerce and E-Commerce and understand the relationship between them.
- To discuss in detail the Business Models of Mobile Commerce.
- To study the categories of Mobile Commerce applications.
- To discuss in detail the Mobile Advertising and Mobile Payment Systems.

## III. FROM E TO M COMMERCE

There has been a migration from E-commerce to M-Commerce<sup>[1]</sup> due to a number of inherent factors:

### A. Time cost

In case of M-Commerce services are provided at the point of need but in case of a traditional e-commerce, customers had to move from a work environment to a computing environment.

### B. Convenience cost

Due to the fact that the different M-Commerce platforms are integrated to the work environment there is no transition required. One can access it from anywhere. Since mobile devices are easy to carry it offers more ubiquity and convenience.

### C. Customizable

Given that mobile devices are usually owned by individuals and not shared between different users, M-Commerce allows the services to be catered towards the users' needs (e.g. ring tones).

### D. Increase in number of devices

With the sales of iPhones and Galaxy tabs the potential mass market for M-Commerce is sky rocketing. With a shift in the medium of communication from PCs to tablets and smart phones there is a parallel transition from E-commerce to M-Commerce.

## IV. DIFFERENCE BETWEEN M-COMMERCE AND E-COMMERCE

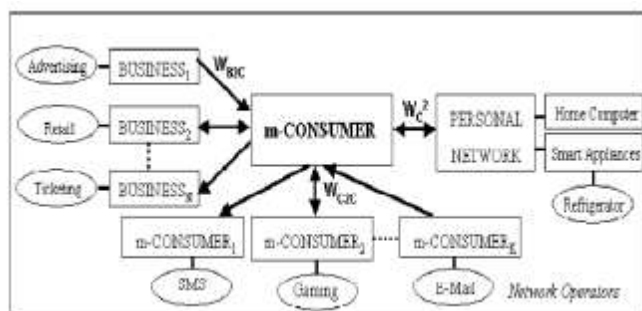
The main difference<sup>[2]</sup> between E-Commerce and M-Commerce is that in E-Commerce any trading or transaction is performed via computer networks like internet. In M-Commerce, any trading or transaction is held via wireless devices such as cellular phones<sup>[3]</sup>.

The comparison between M-Commerce and Ecommerce is:

- 1) M-Commerce and E-commerce are business transactions done online.
- 2) M-Commerce stands for Mobile Commerce while E-commerce stands for Electronic Commerce.
- 3) M-Commerce uses mobile devices for commercial transactions while E-commerce uses computers.
- 4) M-Commerce is available anywhere you go, even if there is no Internet. For E-commerce, you still need to go to a place where there is Internet to access your online transactions.
- 5) M-Commerce is very handy and easy to carry while E-commerce you cannot always bring with you your computer or laptop anywhere.
- 6) M-Commerce is charged through the caller's rate, deduction of user's credit, and mobile banking. E-commerce is charged through the use of credit cards that are swiped in credit card machines
- 7)

**V. BUSINESS MODEL OF MOBILE COMMERCE**

Coursaris and Hassanein from McMaster University in Canada provide business process model of Mobile Commerce. An associated business model is shown in figure.1



**Fig. 1 Business Model of M-Commerce**

Their three entities are Mobile Businesses, Mobile Consumers and Personal Networks.

**Mobile Businesses** essentially refer to service providers that a consumer may need or want wirelessly interact with for business-related purposes-e.g. for some particular service delivery [4].

**Mobile Consumers** refer to individuals that may need or want to wirelessly interact with service providers to procure some specific service for personal purposes [4].

**Personal Networks** refer to the communications infrastructure owned and accessed by consumer and which form part of the end-to-end transaction. This infrastructure may be specific to a particular technology or environmental context [4].

In addition, figure 1 shows that the different entity types form four kinds of business perspectives of Mobile Commerce.

**A. Wireless Business-to-Consumer Model**

The Wireless Business-to-Consumer (WB2C) model adopts the perspective of activities, as opposed to transactions, to describe the interactions and relationships between organizations and mobile consumers [5]. For Example: mobile advertising, mobile shopping, mobile ticketing, mobile stock trading, and mobile banking.

**B. Wireless Business-to-Business Model**

The Wireless Business-to-Business (WB2B) model describes commercial transactions between organizations-such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer [6]. Its major characteristic is that the supply chain of constituent organizations required for the transactions, and the associated transaction process itself is predominately underpinned by wireless networks and communications.

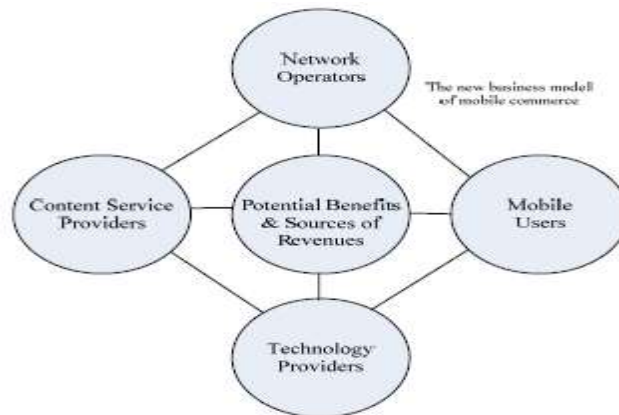
**C. Wireless Consumer-to-Consumer Model**

The Wireless Consumer-to-Consumer (WC2C) model views activities occurring between consumers through some third party [6]. These activities are fairly common and typical such as E-mail, SMS, gaming, web access, and location-based activities.

**D. Wireless Consumer-to-Self Model**

Mobile devices are increasingly becoming part of end-to end and sensor-based systems. For example, smart phones and personal networks can be used to communicate with or control other devices such as vehicles, smart refrigerators, and domestic media recorders. This form of usage is encapsulated by Coursaris and Hassanein in a model called Consumer-to-Self. The Wireless Consumer-to-Self (WC2) model thus provides a perspective of the interaction of related activities that occur amongst mobile consumers themselves in context of personalized or context-based scenarios [7].

Figure 2 illustrates a model of Mobile Commerce including the associated stakeholders.



**Fig. 2 Model of Mobile Commerce including the Associated Stakeholders**

As shown in figure 2, Network Operators, Content Service Providers, Mobile Users, Technology Providers and potential

benefits & sources of revenues comprise the essential structure and basis of interaction for the model.

**VI. MOBILE ADVERTISING**

Mobile advertising is a rapidly growing sector providing brands, agencies and marketers the opportunity to connect with consumers beyond traditional and digital media directly on their mobile phones. Besides voice services, mobile users have access to data services such Short Message Service (SMS), also known as text messaging, picture messaging, content downloads and the Mobile Web. These media channels carry both content and advertising.

**A. Comparisons with Internet Advertising <sup>[8]</sup>**

Mobile Interactive Advertising refers to advertising or marketing messages delivered to portable devices, either via a synchronized download or wirelessly over the air. Although this broad definition potentially includes ads delivered to laptops, media players, and other classes of portable device, in practice the most interesting and potentially revolutionary part of the mobile interactive advertising market lies in delivering messages to non-PC devices—primarily mobile phones, but also including portable media players and game devices.

	<b>Internet Advertising</b>	<b>Mobile Advertising</b>
<b>Interface</b>	Minimum 15 inch screen size, mouse and QWERTY keyboard	Currently limited by small screens and a majority of non-QWERTY keypads.
<b>Experience</b>	Standardized Browsers, customizable, and user-friendly.	No standard browsers, limited customization (mostly kept to favorites), and not as user-friendly.
<b>Device presence</b>	Laptops make the PC-based Web portable, but still require conscious decision to carry. Inconvenient to take out, turn on, connect.	Pocket able, always on.
<b>Interactivity</b>	Latency period in driving from offline to traditional online	Drive from offline media to mobile web interaction within minutes of exposure
<b>Consumer receptivity</b>	Clicks less than 1%	Clicks between 2-5%

**Table.1 Comparison of Internet Advertising and Mobile Advertising**

**B. Mobile Advertising Channels <sup>[9]</sup>**

When designing a mobile advertising campaign, there are multiple channels available to reach the consumer. Those

include Mobile Web sites, mobile applications and mobile messaging all of which can be integrated into the interactive campaigns.

**1. Mobile Web**

The Mobile Web is a channel for delivery of web content, which offers and formats content to users in awareness of the mobile context.

**Advertising Opportunities:**

- Banner ads on Mobile Web sites
- Text ads on Mobile Web sites
- Branded Mobile Web sites

**2. Mobile Applications**

Software or content that consumers download to or find pre-installed on their mobile phone and then resides on the phone.

**Advertising Opportunities:**

- Ad placement within applications (e.g., banners, “splash” pages)
- Branded applications

**3. Mobile Messaging**

This category includes SMS and Multimedia Messaging Service (MMS). While SMS is limited to contain text, MMS can contain images, audio and even video content.

**Advertising Opportunities:**

- Text ads (SMS, MMS)
- Branding/CRM (SMS, MMS)
- Banner ads, splash pages (MMS)
- Animated images (MMS)

**VII. MOBILE PAYMENTS**

**A. Different Types of Mobile Payments**

**1. SMS Payments**

SMS Payments are currently one of the most popular methods of using mobile phones to pay for goods or services, or even for person-to-person payments and many experts believe that due to the simple nature of SMS payments, the fact that all the user needs is a phone with SMS capability, SMS payments will continue to be a growth area in mobile payments.

**2. NFC Payments**

Near Field Communication (NFC) payments are a growth area in the field of mobile payments. The mobile phones don’t have to touch the point of sale or each other to transfer information, i.e. money, but they have to be fairly close within four inches/ten centimeters of each other.



**Fig. 3 NFC Payments**

### 3. WAP Payments

WAP Payments <sup>[10]</sup> simply means using the Wireless Application Protocol (WAP) facility on your Smart phone to connect to the internet and then using an online payment method such as PayPal, Google Wallet or Yahoo Wallet or simply entering your credit card details into the payment box on a company's website.

#### B. Mobile Payment Options <sup>[11]</sup>

##### 1. Apple Pay

Included with the iPhone 6, iPhone 6 Plus and upcoming Apple Watch, Apple Pay allows users to load their credit card details and then make payments using a short-range wireless system called NFC. With it, users simply bring their phones close to a terminal for a payment to be made. It's more secure too, because the card number isn't sent. Instead, a substitute called a token is sent so the retailer never sees your card number. The token, if stolen, is useless for subsequent purchases and the only time it gets matched to your card number is by your bank.

##### 2. Google Wallet

Also based on wireless NFC technology, Google Wallet appears similar to Apple Pay, but it's a little different behind the scenes. When paying with Google Wallet, Google assigns your phone a MasterCard number. It exists only in your phone - you don't receive an actual card, and you don't have to go through a credit check. When you pay, the retailer gets that MasterCard number and Google immediately charges your chosen credit or debit card for the same amount.

##### 3. PayPal

It involves the customer "checking in" on a PayPal app when they enter a store that accepts the payment system. That action alerts the store to your presence and paying is as simple as telling the cashier you want to use PayPal. The check-in action transmitted your presence and account details to the store, so the cashier just needs match the charge to your account. The app is available on Android, Apple and Windows Phone.

## VIII. M-COMMERCE APPLICATIONS

The general M-Commerce applications are:

#### A. Mobile ticketing

Tickets can be sent to mobile phones using a variety of technologies. Users are then able to use their tickets immediately by presenting their phones at the venue. Tickets can be booked and cancelled on the mobile with the help of simple application downloads or by accessing WAP portals of various Travel agents or direct service providers.

#### B. Mobile vouchers, coupons and loyalty cards

Mobile ticketing technology can also be used for the distribution of vouchers, coupons and loyalty cards. Mobile delivery enables:

1. economy of scale
2. quicker and easier delivery
3. effective target marketing
4. privacy-friendly data mining on consumer behavior

5. environment-friendly and resources-saving efficacy

#### C. Location-based services

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

- local maps
- local offers
- local weather
- people tracking and monitoring

#### D. 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:

- news services
- stock data
- sports results
- financial records
- traffic data and information

#### E. Mobile Banking

Banks and other financial institutions are exploring the use of Mobile Commerce to allow their customers to not only access account information, but also make transactions, e.g. purchasing stocks, remitting money, via mobile phones and other mobile equipment.

#### F. 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.

## IX. CHALLENGES FOR M-COMMERCE

Although the M modes of commerce are gaining popularity there are still a few areas of adjustments which would give it further acceptance:

#### A. Attraction

Since the customers are not fixed to a single location while browsing for a particular commodity they look for the nearest store. So it very important for the retail stores to clearly mention about the locations and the prevalent offers while promoting their stores on the M-Commerce platforms.

#### B. Visibility

Since the screen/visibility and scope of a mobile device is limited as compared to that of a PC, the app (applications) should also be different. Most of the times it is difficult for a customer to browse through the entire catalogues using a mobile app, hence it should be compact.

#### C. Light pages

The M-Commerce channels suffer from latency and low band width. Hence the page should be lighter so that it can be opened and accessed even when the connections/signals are weak.

#### D. Payment

The payment transactions and the exchange of sensitive data should be made more secure. If it can be ingrained in the minds

of customers that the transactions are safe and secure there might be a significant increase in the number of customers.

## X. CONCLUSION

Hence it is concluded that E commerce as well as M-Commerce both are advancement in technology. Both have helped to increase the trade over the period but M-Commerce has edge over E-commerce. It is beneficial in many aspects like less time and convenient cost and customized. It is used in every field of life like banking, vouchers and services. So the future of M-Commerce is very optimistic.

Over the past few months, the Business Record has reported on the rapid expansion of the wireless communications industry, which analysts say continues to flourish. Dozens of companies are scrambling to repackage their Internet services so they can deliver them wirelessly. People will be able to order movie tickets on the go, find directions instantaneously, access the Internet, send email while relaxing on the beach, and have access to the office scheduler from anywhere, anytime.

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