CHAPTER 3

THE CONCEPT OF MOBILE COMMERCE

The Concept of Mobile Commerce

In the following we characterize the concept of Mobile Commerce and distinguish it from the concept of Mobile Business. We further examine it in the more common contexts of Electronic Commerce and Electronic Business and present an overview establishing a holistic perspective of Mobile Commerce.

3.1 The Conceptual Background and Perspective

Before defining the mobile aspects of commerce (Mobile Commerce) and distinguishing them from the mobile aspects of business (Mobile Business), it is imperative to establish working definitions of the terms “commerce” and “business”, as they seem to have transcended their dictionary meanings\(^1\).

and acquired new significance since the advent of the Internet economy. In this section we further differentiate between the terms “electronic” and “mobile”, so as to clarify the respective concepts by showing their similarities and highlighting their differences.

Difference between “Business” and “Commerce”

The term “business”, in this study, refers to all activities undertaken by a firm in order to produce and sell goods and services. These activities are, thus, not exclusively of “commercial” nature but also include other processes such as procurement, production, customer relationship management (CRM) and human resources management (HRM).

The Oxford dictionary [2002] describes “commerce” as “financial transactions” and “business” among others as “selling/purchasing of goods”. The Concept of

\(^1\) The Oxford dictionary [2002] describes “commerce” as “financial transactions” and “business” among others as “selling/purchasing of goods”
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The term “commerce”, in this work, refers to selling and purchasing of goods and services in both business- and consumer segments and to activities directly related with such transactions. Examples of such activities are marketing measures and after-sales services. The related activities are included so as to take into account that not each and every transfer of ownership or rights to use a good or service must trigger a monetary transaction. The term “commerce” is, hence, seen as an integral subset of the broader term “business”. In accordance with this approach Mobile Commerce is regarded as an integral subset of Mobile Business [Buse, 2002, p. 92; UNCTAD, 2004, p. 25]. Electronic Commerce is correspondingly seen as an integral subset of Electronic Business.

Difference between “Electronic” and “Mobile” Aspects

To understand the difference between Electronic- and Mobile Commerce or between Electronic- and Mobile Business it is essential to understand the similarities and differences between the terms “electronic” and “mobile”. The adjective “electronic”, used within the specific contexts of “Electronic Business” or “Electronic Commerce”, signifies an “anytime access” to business processes managed by computer-mediated networks. Furthermore, the access to such networks is, in this case, stationary. The services are, therefore, not available independent of the geographic location [Hohenberg/Rufera, 2004, p. 35].

The adjective “mobile”, used within the specific contexts of “Mobile Commerce” or “Mobile Business”, signifies an “anytime and anywhere access” to business processes managed by computer-mediated networks. The access takes place using mobile communication networks, making the availment of

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2 Computer-mediated networks are “electronically linked devices that communicate interactively over network channels” [Mesenbourg, 1999, p. 3]. (Tele-) Communication networks are, in turn, used to provide access to these computer-mediated networks.
these services independent of the geographic location of the user [Stanoevska-Slabeva, 2003, p. 2; Hohenberg/Rufera, 2004, p. 35].

Computer-mediated networks are “electronically linked devices that communicate interactively over network channels” [Mesenbourg, 1999, p. 3]. (Tele-) Communication networks are, in turn, used to provide access to these computer-mediated networks. The conventional access to the Internet using fixed-line communication networks, such as Dial-up connections or Local Area Networks (LAN), is referred to as stationary access. This form of access is also called the “stationary” or “immobile” Internet.

At this point it would be useful to differentiate between the terms “mobile” and “wireless”. As opposed to the term “mobile” that signifies an anytime, anywhere access to computer-mediated networks, “wireless” is just a method of communication between electronic devices, e.g. with the help of infrared interfaces [Lehner, 2002, pp. 7-8]. Whereas a mobile device is per se wireless, not every wireless device may be suitable for feasible mobile applications [Anckar/D’Incau, 2002, p. 2]. For example, Wireless Local Area Networks (WLAN) with a limited range of maximum 300 meters cannot support feasible mobile applications.

**Hypotheses about the Mobile Commerce Perspective**

Mobile Commerce is closely related to Electronic Commerce, since the services offered in Electronic- as well as Mobile Commerce are handled electronically by computer-mediated networks and are accessible through communication networks. The only difference in the procedure to Electronic Commerce is that in Mobile Commerce the communication networks are accessed through mobile electronic devices. There exist two different paradigms about the relationship of Mobile Commerce to Electronic Commerce. The first paradigm classifies Mobile Commerce simply as an extension of Electronic Commerce; the second
paradigm regards Mobile Commerce as an independent business field and consequently as an alternative mechanism to Electronic Commerce. That both of these approaches are principally right and hence, individually, too one-sided, can be derived from the following facts:

1. Many of the services offered by Mobile Commerce may as well be availed using the “immobile” (stationary) Internet, e.g. purchasing an entrance ticket to a stadium.

2. At the same time Mobile Commerce opens new business opportunities by offering innovative, location-based and context-sensitive services that the “immobile” Internet is not able to offer. For example the location of the nearest Automatic Teller Machine (ATM) in real time\(^3\) can only be provided by determining the geographic position of the user.

This discussion shows that an exclusivist approach is erroneous and an integrative approach is, therefore, required. As a result of this discussion we can propose the following hypotheses:

1. Electronic Commerce is an integral subset of Electronic Business
2. Mobile Commerce is an integral subset of Mobile Business;

In the following we examine these hypotheses regarding their correctness. For this purpose it is essential to define these terms, at first, individually and then to examine their complex relationships to each other in an integrative and holistic perspective.

3.1.1 Defining Electronic Business and Electronic Commerce

\(^3\) Real time is a “form of information processing where output is generated nearly simultaneously with the corresponding input. Used mostly where the results of the computation are used to influence a process while it is occurring.” [Globaltec, 2004, p. 1]
In the following we describe the earlier mentioned electronic aspects of the Internet economy, namely Electronic Business and Electronic Commerce.

**Electronic Business**

Electronic Business is often referred to as “E-Business” or “eBusiness”. This book works with the full form “Electronic Business”. Other forms are however left unaltered if cited from a reference. The prevailing view in the academic literature regarding Electronic Business is reflected in the following definition:

“E-Business is the integration of systems, processes, organizations, value chains and entire markets using Internet-based and related technologies and concepts.”

“Electronic Business (e-business) is any process that a business organization conducts over a computer-mediated network. Business organizations include any for-profit, governmental or nonprofit entity. Their processes include production-, customer- and internal or management-focused business processes.”

Electronic Business processes include Customer Acquisition and Retention, Electronic Commerce, Order Fulfillment and Tracking, Inbound and Outbound Logistics, Inventory Control, Finance-, Budget- and Account Management, HRM, Product Service and Support, Research and Development as well as Knowledge Management.

**Electronic Commerce**

Electronic Commerce is often referred to as “E-Commerce” or “e-Commerce”\(^4\). This book works with the full form “Electronic Commerce”. Electronic Commerce has found much more attention in the literature than Electronic Business, owing to its proximity to the consumer. There are many definitions of Electronic Commerce in circulation, with each one emphasizing some different aspects of Electronic Commerce.

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\(^4\) A Text Book-Frontiers of Electronic Commerce
A very simple definition is delivered by Kalakota and Robinson:
“E-Commerce is simply the buying and selling of products and services over the Web.” The prevailing definitions may be divided in two primary categories:

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“Transactions are regarded as Electronic Commerce, when the offer for sale as well as the purchase or the actual availment of a product or service is carried out electronically, with the help of a computer-mediated network, against monetary payment.”

This definition seems to be too restrictive as it does not recognize the fact that just some parts of a transaction might also be carried out electronically without having to process all the steps of a value-chain in that form. Further, the emphasis on the monetary character ignores the commercial nature of marketing measures (transactions carried out with the intent to sell a product or service) and after-sales services (transactions carried out in continuation of a preceding monetary transaction), both important features of commercial transactions.

The second category works with a broader definition of Electronic Commerce, “Electronic commerce (e-commerce) is any transaction completed over a computer-mediated network that involves the transfer of ownership or rights to use goods or services. Completed transactions may have a zero price (e.g., a free software download).”

Also according to the Organization for Economic Co-operation and Development (OECD) it is the method used to place or receive an order, not the mode of payment or the channel of the delivery that determines whether a transaction is considered as an Electronic Commerce transaction.

The primary criteria for Electronic Commerce, thus, are the (at least partially) electronic form of a transaction and the transfer of ownership or rights to use a good or service whether against monetary payment or otherwise.
This discussion shows that our first hypothesis of Electronic Commerce being an integral subset of Electronic Business was correct, since all the aspects of Electronic Commerce also take place in Electronic Business but Electronic Business has a larger scope than Electronic Commerce.

3.1.2 Defining Mobile Business and Mobile Commerce

In the following we describe the earlier mentioned mobile aspects of the Internet-economy, namely Mobile Business and Mobile Commerce.

**Mobile Business**

Mobile Business is often referred to as “M-Business” or “mBusiness”. In this study we work with the full form “Mobile Business”. Other forms are however left unaltered if cited from a reference. Mobile Business is often described as an extension of the traditional Electronic Business to wireless devices [Magic, 2000, p. 3] or as an additional channel for it [Stanoeva-Slabeva, 2004, p. 463]. Yet others regard it as “the application infrastructure required to maintain business relationships and sell information, services, and commodities by means of the mobile devices”. [Kolakata/Robinson, 2002, p. 8]. The UNCTAD defines Mobile Business in the following terms:

“Mobile Business involves business-related communication among individuals and companies where financial transactions do not necessarily occur.” [UNCTAD, 2002, p. 89]

Thus, we can regard Mobile Business as an extension of Electronic Business that also provides for some new, unique features, such as location based, context-sensitive services accessible via Mobile Internet and hitherto unknown in Electronic Business. Mobile Business shares, but is not limited to, some common features with Electronic Business that also provides a vast range of services not possible with Mobile Business.
Mobile Commerce

Mobile Commerce is often referred to as “M-Commerce” or “mCommerce”. This book, as with other such terms, works with the full form “Mobile Commerce”. Other forms are however left unaltered if cited from a reference. Mobile Commerce is also known as Mobile Electronic Commerce [Zhang et al., 2003, p. 52]. Mobile Commerce transactions are basically electronic transactions conducted using a mobile terminal and a wireless network. Mobile terminals include all portable devices such as mobile telephones and PDAs, as well as devices “mounted in the vehicles that are capable of accessing wireless networks” and perform Mobile Commerce transactions [Veijalainen et al., 2003, p. 2].

A simple definition of Mobile Commerce describes it as “any transaction with a monetary value that is conducted via a mobile telecommunications network” [Müller-Veerse, 2000, p. 7]. This definition, though simple, is problematic on more than one count:

1. First of all it fails to distinguish between Mobile Business and Mobile Commerce.
2. Secondly, it requires the transaction to have a monetary nature.
3. Finally, it creates an impression that transactions have to be completed exclusively via mobile telecommunication networks.

This prerequisite restricts the scope of Mobile Commerce to very few digitally deliverable “immaterial” products such as “information”. A vast range of transactions, initiated via mobile electronic devices and involving “material” products is, thus, falsely excluded from Mobile Commerce. Some other definitions, often cited in the literature, tend to ignore Telematics, an important feature of Mobile Commerce. Such definitions concentrate on the appliance of mobile hand-held devices.
“M-Commerce is the use of mobile (hand-held) devices to communicate and conduct transactions through public and private networks.” [Balasubramanian et al., 2002, p. 349] “M-Commerce is the buying and selling of goods and services, using wireless hand-held devices such as mobile telephones or personal data assistants (PDAs).” [UNCTAD, 2002, p. 89] Such definitions, thus, only provide incomplete, often one-sided descriptions of the phenomenon of Mobile Commerce. These definitions, usually formulated in the initial phase of Mobile Commerce, do not seem to be appropriate for an extensive study of Mobile Commerce today, even when they provide useful insights for understanding Mobile Commerce.

It is therefore essential to formulate a working definition of Mobile Commerce that takes all of the above-discussed factors into account. For the purpose of study we define Mobile Commerce as following:

Mobile Commerce is any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device.

Characteristics of this Definition

1. The primary criterion of mobility is the method of access: Not all mobile devices provide for a mobile access to communication networks. For example, laptops – a mobile device – generally use stationary access to networks. Even when a laptop connects to a wireless network, its usage, while on the move, is limited owing to factors such as size and weight. On the other hand Telematics devices mounted in vehicles are capable of providing a truly mobile access to telecommunication networks.
The computer-mediated networks may be partially or even fully wired, as long as they are able to receive and handle requests sent by mobile electronic devices.

2. Some parts of a transaction may be processed in a stationary sector. For example, ordering a piece of clothes using a mobile phone is very much a Mobile Commerce transaction, even when the transaction is processed by stationary computer-systems, sent by normal post to the customer and paid against an invoice. Important is only that at least the initiation or the completion is carried out using a mobile access via an electronic device.

3. The completed transaction need not have a monetary character, as long as the transaction is carried out as a marketing measure or as an after sales service.

This discussion shows that our second hypothesis of Mobile Commerce being an integral subset of Mobile Business was also correct, since all the aspects of Mobile Commerce also take place in Mobile Business but Mobile Business has a larger scope than Mobile Commerce.

This discussion also proves our third hypothesis of Mobile Commerce sharing a subset with Electronic Commerce to be correct, since they both offer a similar set of services in addition to services unique to each one of them.

3.1.3 The Mobile Commerce Perspective
Figure 3.1: The Mobile Commerce perspective

The graphic illustrates the following facts:

1. Electronic Business and Mobile Business offer many similar services in both commercial and non-commercial areas. Respective examples are sale/purchase of goods and services on the one hand and CRM on the other.

2. Electronic Business offers additional services, not feasible with Mobile Business, e.g. coordination of Research & Development activities.

3. Mobile Business, too, offers unique services, not feasible with conventional Electronic Business, e.g. context-sensitive CRM.

4. Electronic Commerce is an integral subset of Electronic Business.

5. Mobile Commerce is an integral subset of Mobile Business.

6. Electronic Commerce and Mobile Commerce offer many similar services, e.g. booking an entrance ticket for a football match.
7. Electronic Commerce offers additional services, not feasible with Mobile Commerce, e.g. selling of high-quality, non-standardized products requires an intensive presentation not feasible on mobile devices.

8. Mobile Commerce, too, offers unique context-sensitive, location-based services, not feasible with Electronic Commerce, e.g. search for the nearest ATM specific to a dynamic location. This discussion establishes a Mobile Commerce perspective and distinguishes it from other related terms. The concept of Mobile Commerce is now further characterized in the following section.

3.2 The Features of Mobile Commerce

Mobile Commerce is characterized by some unique features that equip it with certain advantages against conventional forms of commercial transactions, including Electronic Commerce [Müller-Veerse, 2000, pp. 8-9; Accenture, 2001, pp. 4-5; Buse, 2002, pp. 92-95; Kemper/Wolf, 2002, p. 402]:

1. **Ubiquity**: Ubiquity means that the user can avail of services and carry out transactions largely independent of his current geographic location (“anywhere” feature). This feature can be useful in many situations, e.g. to cross-check prices while standing in a supermarket.

2. **Immediacy**: Closely related to the feature of ubiquity is the possibility of real-time availment of services (“anytime” feature). This feature is particularly attractive for services that are time-critical and demand a fast reaction, e.g. stock market information for a broker. Additionally, the consumer can buy goods and services, as and when he feels the need. The immediacy of transaction helps to capture consumers at the moment of intention so that sales are not lost in the discrepancy between the point of intention and that of the actual purchase.
3. **Localization:** Positioning technologies, such as the Global Positioning System (GPS), allow companies to offer goods and services to the user specific to his current location. Location based services can be, thus, offered to meet consumers’ needs and wishes for localized content and services.

4. **Instant connectivity:** Ever since the introduction of the General Packet Radio Service (GPRS) mobile devices are constantly “online”, i.e. in touch with the network (“always-on” feature). This feature brings convenience to the user, as time-consuming dial-up or boot processes are not necessary.

5. **Pro-active functionality:** Mobile Commerce opens, by the virtue of its ability to be immediate, local and personal, new avenues for push marketing, such as content- and product offers. Services like “Opt-in advertising” can be offered, so that a user may choose the products, services and companies which he wants to be kept informed about. The Short Message Service (SMS) can be used to send brief text messages to consumers informing them of relevant local offerings that best suit their needs. This feature ensures that the “right” (relevant) information can be provided to the user at the “right” place, at the “right” time. On the other hand, the user does not have to fear missing some potentially crucial information or getting it too late.

6. **Simple authentication procedure:** Mobile telecommunication devices function with an electronic chip called Subscriber Identity Module (SIM). The SIM is registered with the network operator and the owner is thus unambiguously identifiable. The clear identification of the user in combination with an individual Personal Identification Number (PIN) makes any further time-

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5 SMS refers to the ability of mobile telephones to send and receive text messages. The text comprises of alphanumeric combinations (words and numbers). Each short message may comprise of up to 160 Latin or up to 70 non-Latin (e.g. Chinese) characters [Buckingham, 2000b, p. 2].

6 SIM – synonymous with the “Smart Card” – is required by all mobile telephone customers in order to operate their phone. It carries authentication, billing and other personalized information about the individual subscriber [UMTS Glossary, 2005, p. 1].
consuming, complicated and potentially inefficient authentication process redundant.

These unique features of Mobile Commerce can provide the user with some concrete and specific advantages. The following section describes some of them.

3.3 The Specific Advantages of Mobile Commerce

Mobile Commerce, on account of its earlier discussed features, can provide users with additional, value-added utility, particularly in following situations [Accenture, 2001, p. 5; Anckar / D’Incau, 2002, p. 3; Buse, 2002, p. 93]:

1. *Context-specific services:* Mobile Commerce makes it possible to offer location based services, which are specific to a given context (e.g. time of the day, location and the interests of the user). Such services offer new opportunities for personalized push-marketing in close proximity to the vendor thereby increasing the probability of sales. It enhances brand presence and thus encourages consumers to remain loyal to brands they are acquainted with.

2. *Time-critical situations:* The ubiquity and immediacy of Mobile Commerce allows the user to perform urgent tasks in an efficient manner, e.g. fast reaction to stock market developments irrespective of his current geographic location. It is also useful in emergency situations.

3. *Spontaneous decisions and needs:* Spontaneous needs are not externally triggered and generally involve decisions that do not require a very careful consideration, e.g. purchase decisions involving small amounts of money. An example of such a service would be reserving a place in a restaurant or cinema spontaneously. Users may also be provided with access to entertainment content, e.g. horoscope, music or sport news while on the move and with free time on the hand.
4. **Efficiency increase:** Mobile Commerce helps increase the productivity of the workforce by increasing the efficiency of their daily routines. Time-pressured consumers (employees) can use ‘dead spots’ in the day, e.g. during the daily travel to and from workplace, more effectively.

This can be utilized, e.g. to check e-mails, get current news, order products and carry out bank transactions.

The above discussion shows that Mobile Commerce has the potential to offer some new, hitherto unknown services to users on account of its unique features.