

学校编码: 10384

分类号\_\_\_\_\_密级\_\_\_\_\_

学号: 15220061153467

UDC \_\_\_\_\_

廈門大學

硕士学位论文

手机支付方式研究

Research on Mobile Payment for E-commerce and Non  
E-commerce

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论文提交日期: 2011 年 4 月

论文答辩时间: 2011 年 月

学位授予日期: 2011 年 月

答辩委员会主席: \_\_\_\_\_

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2011 年 4 月

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## 摘 要

当今人们的日常生活中，手机是随身携带的小物件之一。据国际电讯协会（ITU）统计，2010年，全球的手机用户共超过50亿<sup>[1]</sup>，而美国普查局提供的当年全球人数为69亿<sup>[2]</sup>。它意味着，全球70%的人口中，平均每人至少拥有一部手机。可以说，全球范围内，存在着一个以庞大手机网络为平台的经济交易市场。

本论文的主要目标是，在目前的智能手机已经具备与个人计算机相同能力之时，如何使用手机支持电子交易和手机交易。本研究提出，经过开发，智能手机可以被开发为能够实现各种功能的特殊钱包——一机在手，无所不能；其中的所谓“手机支付功能”，则是使用手机进行交易和实施付款。可以设想，人们再也无需揣着内置信用卡、银行卡、汽车卡、身份证等重要证件的硕大钱包，小心谨慎地为各种目的而分别出示这些证件或刷卡。同时，由于银行无需打印账单之类，还可以减少全球变暖。的确，这将对人类文明产生一点贡献。

本论文的第一章，阐述研究背景与主要研究内容，还对相关技术问题进行了回顾。第二章中，详细考察电子交易与手机交易的最新发展。第三章从代际更新的角度，描述手机及其软硬件的演进以及如何支持手机支付功能。第四章深入分析通过手机支付方式（m-payment）所支持的各种交易活动。在第五章，分析当前手机支付（m-payment）的各种方式。第六章，论文作者从理论上提出了一种新的手机支付（m-payment）初步设计模式，讨论了这种新型智能手机的相关实施技术，还考虑了各个手机支付系统和所有手机交易方面的合作问题。最后一章是第七章，给出论文结论。

**关键词：**电子商务，智能手机，电子交易，手机交易，手机支付

## **Abstract**

In our everyday life, mobile phone is one of thousands of gadget that we bring with us wherever we go. Mobile phone users hit over 5 billion in 2010 around the globe, according to the International Telecommunication Union (ITU) <sup>[1]</sup>, while earth population according to United States Census Bureau about 6,9 billion peoples <sup>[2]</sup>. It means that more than 70% of world populations have at least one mobile phone per person. From this data we can say mobile market has a cross country market around the world.

The main goals of this thesis is, therefore, when smart phone have the same ability with pc then it can be use to support e-commerce as what we call as mobile business. The idea is to show the smart phone in the different approach as a future wallet; transactions, payments will be done with the mobile phone, which we call it mobile payment. Peoples do not have to bring wallet anymore and also can reduce global warming while central bank not printed bank note. This will give a big contribution to human civilization.

Chapter 1 of the thesis provides introduction to of the research background, main contents of the thesis and quick overview of technologies issues to this research. Chapter 2 draws a detailed examination of recent developments in e-commerce and mobile commerce, while chapter 3 details prescribe the evolution of mobile phone technology from mobile phone generation to mobile phone hardware and its software which supporting mobile payment. Chapter 4 deeply analyzed present ecommerce through mobile commerce, Chapter 5 Analysis of current available alternative to make payment with mobile (m-payment). Chapter 6 is talking about a new conceptual design of mobile wallet from author perspective, implementation of available technology like NFC to the smart phone and the second is collaboration between mobile payment systems to cover all of transaction payment using smart phone, and the last Chapter 7 is conclusion.

**Keywords:** Smart Phone, E-commerce, Mobile Commerce, Mobile Payment, E-wallet.

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## Chapter 1 Introduction

### 1.1 Research Background and Main Contents

Admittedly, today's world is running on the network platform, the global village's business is increasingly dependent on rapid development of the internet business. In other words, e-commerce is becoming an important means of today economic activities. The fast growing internet impacted on ecommerce too, based on Internet World Stats about 28.7% of the population in this earth already connected to the Internet <sup>[4]</sup>. The amount of trade conducted electronically has grown extraordinarily with widespread Internet usage. The use of commerce is conducted in this way, spurring and drawing on innovations in electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection system. Modern electronic commerce typically uses the World Wide Web at least at some point in the transaction's lifecycle, although it can encompass a wider range of technologies such as e-mail, mobile devices and telephone as well.

E-commerce extensive use of this new online business transaction, including eBay.com, Amazon.com, taobao.com and alibaba.com, millions of transaction a day happened through these web sites. Cheaper prize compared to retail store, customers have many options to choose, distance is not a problem, and we can make transaction wherever we are as long as we connected to the internet. In China many retail shop closed because they cannot compete especially in the price range.

One of the most important things that make e-commerce succeed as what we can see from two giant e-commerce website like ebay.com and taobao.com are the payment method. Some of web stores like eBay.com have PayPal to support payment, while some other copy cats like taobao.com have Alipay as its payment method. PayPal and Alipay have the same concept, the two companies provide an authenticated account for every user, that the user can put some amount of money in the account to pay every transaction that have been made or transfer to another account through the internet.

Since the method of payment for E-commerce is so important, the new R & D performance is more superior or means of payment as e-commerce development of a new research topic. Because of this, my research interest is mobile payment as a future possibility. In our everyday life, mobile phone is one of thousands of gadget that we bring with us wherever we go and became a part of our social life. Mobile phone users hit over 5 billion in 2010 around the globe, according to the International Telecommunication Union (ITU) <sup>[1]</sup>, while earth population according to United States Census Bureau about 6,9 billion peoples <sup>[2]</sup>. It means that more than 70% of world populations have at least one mobile phone per person. From this data we can say mobile market has a cross country market around the world.

According to my long-term interest, study and research of electronic payment , I think, mobile can be a great potential for the future of a new type payment, not only in e-commerce has a wide application field, but also in non e-commerce's applications in many fields of inestimable. By observing the development of mobile technology and mobile - especially the smart phone to track the development of new achievements, I think, mobile (especially the smart phone) as the future of electronic payments, will have the most extensive application prospects. In the future human will carry only a smart phone and left their conventional wallet at home including their laptop or pc. Smart phone will become all in one gadgets, simple, convenient and efficient as of from telecommunications equipment, music player, movie player, internet browser, camera and camcorder, game console and even as a wallet. Can you imagine how use full is your smart phone is?!!

With smart phone that have an e-wallet feature, expected will help reducing paper used to produce bank note. This will support green world and give a big contribution to human civilization!!!

This research describes, when smart phone have the same ability with pc then it can be use to support e-commerce as what we call as mobile business or mobile commerce. The main idea is to show that smart phone in these days with its technologies, the availability of telecommunications transmission beside as telecommunication tools have a different approach as a future wallet; transactions, payments will be done with the mobile phone then we call it electronic wallet or e-wallet.

## 1.2 Technological Issues to This Research

Inevitably, this study involved the development of mobile technology. Mobile phone technology growth so fast since the first time it was invented by a truck driver as an experiment in the summer of 1946 from a phone weighing close to 80 pounds using radio transmitter<sup>[3]</sup>. The first wireless network, known as 1G, was founded during the 1980s. 2G was introduced in the early 1990s as a way of allowing more transmissions to occur per communication channel. 2G have data transfer rate at 1.8 KB/s. The foundations of 3G were established in the late 1990s and have been implemented throughout the majority of the world as of the early 21st century. While the 3G network was the first to allow for multimedia applications at data transfer rate from 480 KB/s to 1,706 KB/s on 3.5G, 4G promises to take this basic technology and amplify its usage. The specifics of the 4G network are geared towards a higher quality of service with a high speed data transfer from 12.5 MB/s to 40.750 MB/s. Better reception and less dropped data and information exchanges are a priority.

Moreover, the development of mobile hardware and software could not be ignored. On the hardware side, the modern mobile phone known as smart phone uses the technology as the same as personal computer, which have 4 main parts; CPU, RAM, flash memory as the hard drive and the video chip. While the latest processor for mobile phone already use dual core processor based on ARM architecture that run on 1,2 GHz and have power above pc processor in the 21th. Support 3D rendering to play 3D games or movie. In the software side, mobile phone have many operating systems; Symbian, Windows Mobile, IOS, RIM, Androids, WebOS and Bada. Supported with millions of applications, since the operating systems created using the same backbone kernel with personal computer operating system, the function and the capability of mobile operating system same as the one in the pc. A smart phone can replace a pc functions in the everyday used, like playing music, playing games, watching HDMI movie, working with spreadsheets, browsing the webs, making a VoIP call with a smaller form factor size which fit our pocket.

## **Chapter 2 Inspection of E-commerce and Mobile Commerce**

### **2.1 Overview for E-commerce**

#### **2.1.1 Whole Picture of E-commerce**

E-commerce (electronic commerce or EC) is the buying and selling of goods and services by businesses and consumers on the Internet, especially the World Wide Web.

Haag, Cummings and Phillips (2007), electronic commerce (e-commerce) is commerce, but it is commerce accelerated and enhanced by Information Technology, in particular the Internet. E-commerce enables customers, consumers, and companies to form powerful new relationships that would not be possible without the enabling technologies. E-commerce breaks down business barriers such times, geography, language, currency, and culture. In a few short hours, you can set up shop on the internet and be instantly accessible to millions of consumers worldwide. The internet facilitates commerce because of its awesome ability to move digital information at low cost <sup>[5]</sup>.

Kurbel (2008), electronic commerce (e-commerce) refers to the process of buying and selling products or services over a digital network. Usually it is assumed that this network is the Internet and that the products or services are offered via the World Wide Web <sup>[6]</sup>.

Arthur and Stephen (2009), electronic commerce (e-commerce) is concerned with how computers, information systems and communications technologies can be used by people to improve the ways in which they do business <sup>[7]</sup>.

Markellos, Markellou, Mertis and Panayiotaki (2009), e-commerce (electronic commerce) and e-business (electronic business) feature as extremely dynamic economic sectors and at the same time, as the most appealing ways of beginning or expanding a business activity. Successful companies today recognize these technologies and the Internet as mainstream to business success. Indeed, their future will continue to be promising to companies seeking means for cost cutting, enhanced productivity, improved efficiency, and increased customers' satisfaction <sup>[8]</sup>.

Laudon and Laudon (2009) e-business includes activities for the internal management of the firm and for coordination with suppliers and other business partners. It also includes electronic commerce, or ecommerce. E-commerce is the part of e-business that deals with the buying and selling of goods and services electronically with computerized business transactions using the Internet, networks, and other digital technologies. It also encompasses activities supporting those market transactions, such as advertising, marketing, customer support, delivery, and payment <sup>[9]</sup>.

### **2.1.2 Special Features of E-commerce**

E-commerce, (electronic commerce), is online commerce versus real-world commerce. E-commerce includes retail shopping, banking, stocks and bonds trading, auctions, real estate transactions, airline booking, movie rentals—nearly anything we can imagine in the real world. Even 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, normally available to local customers exclusively.

An electronic shop (or a web shop) is an information system that presents products and services in a product catalog. It lets customers add products to a shopping cart and complete the purchase with a financial transaction. Product configuration, personalization and many more features may be included. Electronic business (e-business) takes the concepts and technologies of e-commerce into the inside of the business firm and into the business relations with partners.

As e-commerce necessarily involves interactions of people and technology, any study of how it is used by a small business must be considered in a socio-technical context. Although there is no universal consensus on what constitutes e-commerce, it must be considered to contain elements of information systems, computer hardware technology, business processes, communications technologies, and people. The complexity of studies in e-commerce is due, to a considerable degree, to the interconnected parts played by human actors and by the multitude of non-human entities involved. Small business managers, sales people, staff involved in procurement and warehouse operations, computers, software, Web browsers, Internet service providers (ISP), modems, and Web portals are only some of the many heterogeneous components of an e-commerce system.



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