An Empirical Analysis of Factors that Influence the Adoption of Internet Banking in China: A Case Study of Zhengzhou

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By Lu (Nancy) Zheng

The developments in information technology and telecommunications have set in motion an electronic revolution in today's banking industry including China's banking sector. This in turn results new delivery channels for banking products and services such as Automatic Teller Machine (ATM), telephone banking, cable television banking, Personal computer banking (PC), and Internet banking. Internet banking has become one of the most popular banking adopted by consumers. The evolution of Internet banking benefits both the banks and their customers, and most banks have been using it as one of their distribution channels. Benefits of the internet banking to banks include generating additional revenue, improving customer service, extending marketing, and increasing cost saving. For consumers, Internet banking means convenience, but there is an increasing risk exposure to consumers in regard to internet-based services and the growing importance of offering consumer support services such as security to mitigate security risk exposure. This research investigates the factors that affect consumers' adoption of Internet banking services in Zhengzhou, China. These factors include personal factors, services quality factors, price factors, service product factors, situational factors, perceived risk factors, computer illiterate

factors, etc. This research also provides an understanding of the specific factors that affect the consumers' decision whether or not to adopt Internet banking.

Keywords: Internet banking, China, Banking, Telecommunication

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Table of Contents

List of Tables

List of Figure

List of Appendices

Chapter 1: Introduction

1.1 Introduction and Evolution of Electronic Banking

The financial service industry, especially banks, has responded to constant market changes by adopting different types of delivery channel strategies. These market changes include: customer banking tastes and preferences, increasing competition from non-bank financial institutions, shifting demographic and social trends, government deregulation of the financial service industry, and technological innovation and development. The Automatic Teller Machine (ATM), telephone banking, Personal Computer (PC) banking, and Internet banking are examples of how the banking service industry has revolutionized since the 1970s.

The Internet is widely used as a new media for interactive communications including banking. Information technological development in the banking industry has speeded up communication and transactions between banks and customers (Giannakoudi, 1999). The information technology revolution in the banking industry, especially in regards to distribution channels, begin in the early 1970 with the introduction of the credit card, the Automatic Teller Machine (ATM), and the ATM networks (Gan, Clemes, Limsombunchai, and Weng, 2006). This is followed by telephone banking, cable television banking in the 1980s, and the progress of personal Computer (PC) banking in the late 1980s and in the early 1990s (Giannakoudi, 1999). Information technology enabled electronic channels to perform many banking functions that were traditionally carried out over the counter (Giannakoudi, 1999).

The emerging trend of Internet banking raises important issues in the area of consumers' banking behaviors and choices. For example, technology is changing the ways how home buyers and consumers borrow money. In the past, people who wanted to obtain mortgage loans or personal loans have to go to the bank in person. Today, they can arrange for a loan from the comfort of their home via the Internet (Gup and Kolari, 2005). The success or failure of many retail banks is dependent upon the capabilities of management to anticipate and react to such changes in the marketplace (Gan et al., 2006).

In addition, the structure and process have changed the banking relationships with customers today, as they are formed with little personal interactions. Consequently, the relationship building landscape has gradually shifted from the traditional over-the-counter personal relationship to a more cost efficient virtual relationship (Harden, 2002; Karjaluoto, Mattila, and Pento, 2002). For example, Internet banking is conducted through standardized web browsers requiring no additional software or infrastructure. This is a cost saving service to both banks and customers. Internet banking enables speedy transactions access, and time and money savings while providing paper free, complete and up-to-date transactions (Wright and Ralston, 2002).

The global banking industry has used interactive advertising as a major distribution channel in order to sell products, provide services, contact customers, and create customer relationships (Samphanwattanachai, 2007). "Electronic commerce is transforming the marketplace by changing firms' business models and by shaping relationships amongst market actors and contributing to changes in market structure"

(OECD, 1998). Electronic commerce has led to an increase in non-bank financial institutions competing with banks in the financial market. Customers have more financial options in banking services. Banks in general have attempted to build customer satisfaction through providing better products and services, and at the same time, reduce operating cost (Padachi, Rojid, and Seetanah, 2007). Thus, the banking industry has been innovative and receptive to new technological development in the financial service industry. The latest innovation is Internet banking (Ozdemir, Trott, and Hoecht, 2008).

Internet banking can be described as the provision of information or services by banks to their customers, via the Internet network. At the basic level, Internet banking involves a bank setting up a World Wide Web (WWW) site to provide information about its products and services (Daniel, 1999; Sathye, 1999; Karjaluoto et al., 2002). Web banking allows consumers to purchase a wide range of products and services online. These include various accounts and card products (such as deposit accounts, debit and prepaid cards, credit and commercial products, loyalty and gift cards) and services (such as account management, statement payments, funds transfers). At the advanced level, Internet banking is the enabling of 'transactional' services to customers over the Internet. For example, the Westpac Bank offers customers automated services such as direct debits for regular payments, or direct credit for salaries and allows customers to access their account 24 hours a day with Business Online, Online Banking or DeskBank (at http://www.westpac.com).

According to DeYoung, Lang, and Nolle (2007), California-based Wells Fargo in 1995 was the first bank to introduce online transactions and established the first

virtual branchless bank. A decade later, banks from the US and Western Europe began to offer Internet banking services (DeYoung at el., 2007; Hernando and Nieto, 2007). The decision to provide online banking is currently perceived as vital for customer retention and maintaining competitive advantage in the banking industry (DeYoung and Duffy, 2002).

Internet banking services are available in most banks today. The service allows customers to check their account balances, transfer funds, pay bills, trade stocks, and applying for loans. Integration, customer convenience, and retention are popular terms for bank managers, particularly at larger financial institutions that offer a wide range of products (Martin and Ambrosio, 2003). "Without a doubt, the word that constantly comes up from customers is 'convenience'", says Karl Felsen, marketing manager for Fleet bank (Martin and Ambrosio, 2003). The integration of the Internet in distribution strategies has obliged banks to make important organizational changes, involving additional integration of new technologies, upgrading and developing the workstation, training employees in the new tools, integrating the new front office applications into the bank office production chain (White paper, 2004).

Internet banking services are synomunous with the automated teller machine (ATM) of the 21st century (Samphanwattanachai, 2007). Similar to the ATM, Internet banking services give users 24 hours 7 days access to their account, and allow customers to conduct more complicated transactions, such as pay bills, applying for housing loan applications, online shopping, account consultation, and stock portfolio management (Surmacz, 2003). According to Emor's study (2002) on the growth of Internet usage among the Estonian population, the author shows the competition

among the Internet service providers has intensified as many of them have lowered their prices for permanent connection (Kerem, 2003). This change motivated old users to move from slow and expensive dial-up connections to faster quality connections and has also attracted new users to the Internet (Kerem, 2003). Emor's finding show 57% of Internet users have used the Internet for Internet banking during the week. Thus a large proportion of Internet users are also using Internet banking (Kerem, 2003).

The Chinese banking system is characterized by a large proportion of state-ownership and low capitalization. In China, the old banking culture is cash-carry banking. People withdraw lots of cash from one bank and deposit in another bank. It is very common in China for people to physically transfer money. As the technology integrates into the Chinese banking system, mobile banking and online banking are taking precedent over the traditional cash banking methods. China banks, especially the major commercial banks, have their own Internet banking websites to allow their customers to execute their bank transactions via the Internet. Many Chinese banks have invested in the Internet technology because it is a new channel in banking transactions and services and the customers can conduct their banking needs with little time required and at a cost saving (Feng, Ying, and Jing, 2008).

From a bank's perspective, Internet banking has several advantages, such as maintaining competition, cost savings, enhancing mass customization, marketing and communication activities, and maintaining and attracting consumers (Daniel and Sorey, 1997; Mols, 2000; Read, 1998; Sheshunoff, 2000; and Tomkin and Baden-Fuller, 1998). The primary advantage of Internet banking is cost savings from

a customer's perspective (Kim, Widdows, and Yilmazer, 2005). Chang (2002) shows Internet banking has a low transaction cost and provides high speed services when compared to traditional banking services. According to Chang's study, for money transfer, the cost of the transaction is USD95 cents for checking and USD27 cents for ATM, but it is only USD1 cent via the Internet (Chang, 2002). From the customers' satisfaction perspective, the digitization of the banking relationship is seen as substituting distant relationship channels, in particular the Internet, for branch banking. For example, a survey on the new wave of Internet banking by Novametrie, Internet banking available 24/7 obtained almost the same level of customer satisfaction as the branch banking relationship. The physical relationship between the customers and banks will soon no longer have the unique, irreplaceable qualities of intimacy, confidence and empathy associated with it (White paper, 2004). Internet banking technologies allow consumers easier access to financial services, lower bill-paying, and time saving in managing their finances (Anguelov, Hilgert, and Hogarth, 2004). As customers continue to make increased use of Internet banking, the number of Internet connections is higher than the volume of telephone calls to bank branches (Anguelov et al., 2004). For example, Anguelov et al. (2004) show the U.S. households use Internet banking increased from 4.1% in 1995 to 21% in 2001.

1.2 The Nature of Internet Banking

There are three basic kinds of Internet banking in the marketplace. The basic level of Internet banking is "informational". Typically, the bank has marketing information about the bank's products and services on a stand-alone server (Comptroller's Handbook, 1999). Since the information systems typically have no path between the server and the bank's internal network, the risk to the bank is relatively low. While the

risk to a bank is relatively low, the server or web site may be vulnerable to alternation (Comptroller's Handbook, 1999). To prevent unauthorized users to the bank's server or web site, the appropriate controls must be in place (Comptroller's Handbook, 1999).

"Communication" is another important factor that allows some interaction between the bank systems and the customers. The interaction may be limited to electronic mail, account inquiry, loan applications, or static file updates (Comptroller's Handbook, 1999). These website servers may have a path to the bank's internal networks, therefore the risk is higher for banks with this configuration than with an informational system. Appropriate controls need to be in place to prevent any unauthorized attempt to access the bank's internal networks and computer systems (Comptroller's Handbook, 1999). Virus controls also become much more critical in today's computing environment (Comptroller's Handbook, 1999).

"Transactional" allows the customer to execute their transactions via the web server. Since a path typically exists between the server and the bank's or outsourcer's internal network, this is the highest risk for banks and must have the strongest controls (Comptroller's Handbook, 1999). Accessing accounts, paying bills, transferring funds are included in the customer transactions process (Comptroller's Handbook, 1999).

Banks offer Internet banking in two ways. An existing bank with physical offices can establish a Web site and offer Internet banking to its customers as an addition to its traditional delivery channels (Furst, William, and Daniel, 2000). A second alternative is to establish a "virtual," "branchless," or "Internet-only" bank (Furst et al., 2000).

The computer server that lies at the heart of a virtual bank may be housed in an office that serves as the legal address of such a bank, or at some other location (Furst et al., 2000). Virtual banks may offer their customers the ability to make deposit and withdraw funds via ATMs or other remote delivery channels owned by other institutions (Furst et al., 2000). While "virtual bank" have generated considerable attention in the banking industry, only nine separately chartered banks were Internet-only and offering their Internet services at the beginning of 2000 (Furst et al., 2000). Virtual banks can be established in several ways. For example, new investors in the banking industry obtain charters from state or federal supervisory authorities to establish new, independent virtual banks (Furst et al., 2000). Alternatively, existing banking companies create virtual banks as separately capitalized subsidiary banks of a bank holding company (Furst et al., 2000). A third route is investors purchase the existing charter of a traditional bank, and then to recast the bank as a virtual bank under the existing charter (Furst et al., 2000).

Hong Kong was the first Asian country to provide electronic banking services via the Internet in 1990 (Ongkasuwan and Tantichattanon, 2002). In 2000, the Hongkong Shanghai bank corporation (HSBA) bank in Hong Kong provided the first Internet based retail banking services to the public (Ongkasuwan and Tantichattanon, 2002). The bank provided Internet based deposits, stock trading, bill payment, and foreign exchange services for qualified customers at discounted transaction fees (Ongkasuwan and Tantichattanon, 2002). The bank also reduced the online stock trading commission from RMB0.5 to RMB0.25 for the Internet-based service in order to increase visiting rates and profits (Ongkasuwan and Tantichattanon, 2002).

In Thailand, due to the economic crisis and Non Performing Loan (NPL) in 1997, many banks were forced to reduce costs via a reduction in human resources (Ongkasuwan and Tantichattanon, 2002). Many experienced bank employees were offered early retirement and the remaining employees faced increased workloads with shorter service hours (Ongkasuwan and Tantichattanon, 2002). This change caused the majority of the Thai banks to use Internet banking to reduce waiting time, errors and costs, and ultimately improve customers' satisfaction. This allowed customers to access and inquires about their accounts and performs simple transactions via the Internet from their computer at home or work at their convenience (Ongkasuwan and Tantichattanon, 2002).

The private customers banking portal of Hansabank has more than 397,000 registered users (Kerem, 2003). In Estonia, Internet banking possibilities are provided by all major banks. Out of the 233,700 people used Internet banking, many customers have used the services of more than one bank (Kerem, 2003). Estonia in general, is very suitable for Internet banking applications due to the relatively high penetration of personal computers and Internet access. The heavy user demographic group of Internet banking is between 35-49 years. The lowest usage rates are among 15-24 year olds since many of these younger people might not need a banking service (Kerem, 2003). In addition, single (not married) customer seem to be the dominate users of Internet banking (Kerem, 2003).

In Australia, Internet banking growth has continued despite initial consumer security fears. In 2005, there were approximately 5.5 million Internet banking users (approximately 34 per cent of the adult population) (AC Nielsen, 2005). By offering

Internet banking, the traditional financial institutions wanted lower operational costs, improve consumer banking services, retain customers, and expand their market share (Lichtenstein and Williamson, 2006).

In New Zealand, customers have been accustomed to safe and secure 'electronic information and money transfer systems' (Boer, Evans and Howell, 2000). Increasing numbers of institutions have been introducing and expanding their Internet banking products into the New Zealand market, such as Australia and New Zealand (ANZ) Bank, Bank of New Zealand (BNZ), Auckland Savings Bank (ASB) Bank, National Bank of New Zealand, Westpac Trust Bank, and Taranaki Savings Bank (TSB) bank (Shergill and Bing, 2005). These banks offer a full range of Internet banking services and approximately 56% of the population users Internet banking.

In China, the electronic-based Internet banking is a relatively new banking method and provides financial transaction services to customers. The service includes 24 hour access to customer bank accounts, transfer transaction between accounts, personal financial consulting, online stock trading, shopping, and utilities fee payments (Ongkasuwan and Tantichattanon, 2002).

1.3 Research Justification

Internet banking has many advantages over other traditional banking delivery methods. Internet banking provides banks with an increased customer base, cost savings, mass customization, product innovations, improved marketing, and communication, the ability to develop non-core businesses, and the ability to offer services regardless of geography and time constraints (Giannakoudi, 1999;

Jayawardhena and Foley, 2000). With the development of new technology, Internet banking is expected to become a major banking method for customers. Internet banking should reduce costs by providing customers with another means of accessing their accounts without physically visiting a bank (Martin and Ambrosio, 2003). Financial institutions have been increasingly adopting Internet banking since the mid 1990s to lower their operating costs. In addition, competition pressure from non-banks entering the financial markets by offering financial products and services have forced many banks to adopt Internet banking methods (Mols, 1998; Sathye, 1999). Internet banking also attracts high-quality, high-income clients who require less hand-holding to complete their transactions (Mols, 1998; Sathye, 1999). Similar to the international counterparts, the adoption of Internet banking is growing in China. There are many banks in China offering Internet banking services, such as the Bank of China, Bank of Communications, China Construction Bank, Agriculture Bank of China, Hong Kong and Shanghai Banking Corporation, Industrial and Commercial Bank of China, China Everbright Bank, China Citi Bank, and China Merchants Bank. The first bank offering Internet Banking services was the Bank of China in 1996.

At the beginning of 2007, there were 100 new internet users (average per minute) entering China's internet market. More than one-fifth of the internet users stated they used Internet banking, and approximately one-fourth used online shopping (China Youth Daily, 2007). As of September 2007, Chinese Internet users reached 1.72 billion. In the first half of 2009, the figure was 1.62 billion (China Youth Daily, 2007). It is expected that the usage of Internet banking in China will continue to grow in the near future. By the year 2010, the number of Chinese Internet users is expected to reach 2 billion, with an average annual growth rate of 8%. China's e-commerce

transaction in 2005 amounted to 740 billion Yuan, an increase of 50%, and was expected to exceed 1.3 trillion Yuan in 2007 (China Youth Daily, 2007).

The trend of Internet banking adoption coupled with the shifting landscape in the banking industry, suggest Internet banking may become an increasing important distribution channel for all banks in China. Therefore, there is a need to understand the factors that influence bank customers' adoption of Internet banking. However, there are limited empirical studies that identify the factors and/or the relative importance of these factors influencing Chinese customers' decision to adopt Internet banking. Therefore, this study seeks to provide academics and practitioners an understanding of the factors and their importance that affect Chinese customers' adoption of Internet banking in Zhengzhou, Henan Province.

1.4 Research Problem Statement

Technological innovations (Norton, Reed, and Walden, 1995) are replacing the traditional ways of banking. With a greater competition brought by deregulation, globalization, and widespread mergers and acquisitions in the banking industry, more banks are focusing on developing Internet banking. The use of phone banking and Internet banking is strongly promoted to bring about a change in consumers' banking behaviors. However, Internet banking has not been widely adopted by bank customers in Zhengzhou in Henan Province. This study investigates the factors that influence customers' adoption of Internet banking in Zhengzhou.

The number of people having access to the Internet is one factor that determines the level of demand for Internet banking services. The cost and speed of Internet

connections are other important factors (Li and Worthington, 2004; Sohail and Shanmugham, 2003). Li and Worthington (2004) also argue that customer confidence on Internet banking transactions also influences the adoption rate. For example, how banks deal with any erroneous transactional and security concerns that may occur during online banking impacts on confidence. Jayawardhena and Foley (2000) also reveal that there is a significant correlation between the website download speed and web-users satisfaction in a banking context. Moreover, other website features such as content and design, interactivity, navigation, and security are also important factors that influence the adoption of Internet banking (Jayawardhena and Foley, 2000).

Padachi, Rojid, and Seetanah (2007) suggest that the choice of communication channel has an effect on the relationship between banks and their customers. For example, Hiltz, Johnson, and Turoff (1986) show that computer mediated communication is less personal and socio-emotional than a face-to-face banking transaction and exchange. Face-to-face communication is a better medium to transmit complex messages which are essential to establish a personal contact (Daft and Lengel, 1986). However, Clark and Mills (1993) explain that while some individuals may want to establish relationships that are more personal and friendship-like, there may be others individuals who value efficiency of services and prefer a more impersonal association. Padachi, Rojid, and Seetanah (2007) argue that customers desiring social and psychological benefits by establishing personal relationships with banks will prefer face-to-face interactions to the impersonal virtual Internet banking relationship. Internet banking does not need face-to-face interaction, and this delivery channel could potentially affect a bank's ability to create a trusting relationship between their customers and the bank. On the other hand, for those customers whose

relationship is primarily based on efficiency of services, Internet banking may be an attractive alternative (Padachi, Rojid, and Seetanah, 2007).

1.5 Research Objectives

Today, the Internet banking is growing rapidly in consumer banking preferences and attracts more financial institutions offering Internet banking in Zhengzhou, China. Financial institutions can take advantage of Internet technology to offer cost-effective banking solutions. However, Internet banking in Zhengzhou has not been widely adopted in China. Zhengzhou is located in Henan province and is not as developed as Beijing and Shanghai. It is regarded as Tier 2 to Tier 3 city in China. Therefore, marketers in banks and financial institutions, and academic will benefit understanding the factors which influence the adoption of Internet banking and the relative importance of these factors. They also need to understand the effects of demographic characteristics have on Internet banking. The research objectives are:

1) Identify which factors affect bank consumers' adoption of Internet banking in Zhengzhou, China.
2) Determine the most important factors that are associated with the adoption of Internet banking in Zhengzhou, China.
3) Determine the impact that the demographic characteristics have on Internet banking in Zhengzhou, China.

Zhengzhou is considered as between a Tier 2 to Tier 3 city compared to the more developed cities of Beijing, Shanghai and Guangzhou. It has a population of 7.44 million people at the end of 2008. Projections of a 2007 survey indicate that 16.4% of this population is below 14 years old, 74.7% is between 15 to 64 years old and 8.9% is over 65 years old. In recent years, the size of Zhengzhou's children population has been contracting and its proportion in the total population has been falling

continuously: a comparison with 2000 figures shows that, by 2007, the proportion has dropped 6.4 percentage points (Guide to selling in China, 2009).

Zhengzhou's consumer groups mainly made up of locals. Due to differences in income levels and occupations, consumption levels are uneven. As the society develops, consumers are becoming more rational-minded and the phenomenon of mindless competitive consumption is gradually diminishing. Consumers of different age brackets have different consumption habits for different goods and services (Guide to selling in China, 2009).

1.6 Research Contribution

This study expects to make several contributions to the academic literature and the banking industry. The major contributions of this study are to identify the factors that would affect the consumers' adoption of Internet banking in Zhengzhou, China. This study also determines the most important factors that are associated with the adoption of Internet banking. Furthermore, the study determines the impact that the demographic characteristics have on Internet banking. This information will also provide insights into the consumer decision process on Internet banking. This information should also enable banks to strategically plan their products and service offerings.

1.7 Structure of the thesis

Chapter One provides an overview of the research problem statement and objectives. Chapter Two discusses the evolution of the Internet Banking and reviews the literature on the adoption of Internet banking, including the Chinese banking industry.

Chapter Three explains the variable selection, model formulation and the methodology used in the study. Chapter Four presents a discussion of the empirical results and findings. Chapter 5 provides conclusions of the research findings, policy implications, limitations, and recommendations for future research.

Chapter 2 Literature Review

2.1 Introduction

The evolution of Internet banking from e-commerce has altered the nature of personal-customer relationships and the offering of products and services in the banking industry (Mols, 2000; Wenninger, 2000). Pikkarainen, Karjaluoto, and Pahnila (2004) defines Internet banking as an 'internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments'. Internet banking gives customers access to almost any type of banking transaction at the click of a mouse, except withdrawals. Kerem (2008) shows that Estonian clients demand a minimum relative advantage such as time saving and on fee incurred in order to switch channels, if the new innovative service is perceived to be better than its predecessor. There are two strategies in the Estonia Internet banking case: added convenience and price incentives. The branch-banking venue is characterized by long waiting queue and slow service and it is quite logical for the people with knowledge and accessibility to switch over to Internet banking (Kerem, 2008). The transactions in Internet banks are either considerable lower priced or without any fee at all but for the transaction in branches the fees are very high according to the Estonia standard (Kerem, 2008). That is why the branch transactions are so quickly losing their population.

'Internet banking' refers to a system that enables bank customers to access account and general information on bank products and services through a personal computer (PC), or other electronic devices (Internet banking, comptroller's handbook, 1999). Since the mid-1990s, the U.S. financial institutions have rapidly increased their

services on the internet (Damar and Hunnicutt, 2007). Internet banking is an important Internet-delivery service that provides benefits for both commercial banks and bank customers (Siritanachot, 2008). As a result, Internet banking has become a common service offered by many depository institutions (Damar and Hunnicutt, 2007). Banks now face a situation where the demand for tellers and traditional delivery functions is decreasing (Meuter, Ostrom, Roundtree and Bitner, 2000).

Internet banking is beneficial for both the provider and the customer. It can currently be considered as the cheapest distribution channel for standardized bank operations, such as account services or transfer of funds (Polasik and Wisniewski, 2009). Such service also saves time and money of the bank with an added benefit of minimizing the likelihood of committing errors by bank tellers (Jayawardhena & Foley, 2000). Internet banking offer services regardless of geography and time and banks thus provide services to the customers for at their convenience (Padachi, Rojid, and Seetanah, 2007). According to Karjaluoto et al. (2002), banking is a borderless service no longer bound to time and geography. Customers have relatively easy access to their accounts, 24 hours per day, and seven days a week globally.

CommerceNet (an Internet industry association) and Nielsen Media Research surveyed around 4200 person aged 16 and older in the United States and Canada in 1995 using the Internet, and particularly the World Wild Web (WWW) (Kennickell and Kwast, 1997). There are five main findings in this research: (1) Access to the Internet among respondents grew by 50 percent between August 1995 and March 1996, when some 24 percent of households were estimated to have access to the Internet; (2) use of the Internet and WWW appeared to have grow substantially; (3)

new user, while still “upscale”, encompassed a broader spectrum of the population; (4) commercial uses of the Internet such as the buying and selling of products and services is on the rise; (5) substantial proportions of respondents who say they have access to (21 percent) or used (11 percent) the Internet in August 1995 did not have access in March 1996; major reasons for losing access included no need, cancel Online services, too expensive, and changed job (Kennickell and Kwast, 1997). These results suggest a growing willingness and ability among an increasing broad range of households to use electronic media for commercial purpose including Internet banking (Kennickell and Kwast, 1997).

A study by Booz-Allen and Hamilton (BAH, 1996) targeted on consumer demand for Internet, or WWW banking. The BAH study predicted that the use of Internet banking would grow rapidly from only 0.1 percent of U.S. households at the end of 1996 to 15.7 percent, or a little over 16 million user by the end of 2000 (BAH, 1996). Key inputs to this forecast include projections of the banks offering Internet banking, household computer, and modem penetration rates, overall Internet usage, and the demographic characteristics of users (BAH, 1996). While the study projected rapid growth in Internet banking, Booz-Allen and Hamilton argue that uses of Internet banking will continue to use other banking channels such as the phone and the branch bank.

In the European countries, Internet banking is popular and has started off earlier in countries with a few major players (such as Sweden, Finland, and Estonia) compared to highly competitive markets (such as U.K. and also Norway) (Kerem, 2008). Late start of contemporary banking in general has contributed to the rapid adoption of most

up to date technologies, since old technology is expensive to develop further (Kerem, 2008). Internet banking in U.K. has encountered an increasing demand for cross border payment transactions for smaller amount of cash and payment over the Internet (Ongkasuwan and Tantichattanon, 2002). Many banks continues to develop and launch new banking services on the Internet in order to satisfy and meet their Internet-based customer requirements in term of time, ease of use, security, and privacy in the U.K. (Ongkasuwan and Tantichattanon, 2002). Most of the customers in the U.K. and European countries use Internet banking services to inquire about their outstanding balances in saving and checking accounts, and details about their latest or last transactions for their daily reconciliation (Ongkasuwan and Tantichattanon, 2002). In France and Germany, banks have taken advantage of the Internet to develop their organizational model. In recent years, banks have worked arduously to develop their organization and information system, paying special attention to the workstation and tele-distribution systems (White paper, Survey, Capgemini, Efma, Hp, Microsoft and Novametrie, 2004). The important efforts they have made to enhance the consistency of the different channels seem to have paid dividends and for the first time professionals affirm unanimously that multi-channel banking is a definite reality (White paper, Survey, Capgemini, Efma, Hp, Microsoft and Novametrie, 2004).

The growth of technology in the delivery of services has the potential to markedly influence the way organizations conduct business with customers (Dabholkar and Bagozzi, 2002). Internet banking provides customers with many types of services. Customers can not only check their account balances and transaction history, but they can also make transfers between accounts and pay bills online using the bill payment

service (Li and Worthington, 2004). Customers can also easily download their account history into a variety of formats for inclusion in popular financial software packages, and be confident that these functionalities are backed by a relatively high level of security (Li and Worthington, 2004).

From a banking perspective, DeYoung, Lang, and Nolle (2007) find that Internet banking adoption by community banks in the United States results in "nontrivial increases in bank profitability", mostly due to an increase in non-interest income. The authors conclude that bank customers may be willing to pay for the convenience of internet based transactional services (DeYoung et al., 2007). In a study on Internet banking in Spain, Hernando and Nieto (2007) reach a similar conclusion and note that the adoption of Internet banking technology eventually results in higher bank profits.

As more and more non-banking institutions enter the banking industry by offering financial products and services, this has given customers more options to choose their banking needs. Therefore, competition is another important factor facing banks. They have to retain the existing customers and attract new ones. The use of Internet banking as an alternative channel has allowed banks to target different demographic market segments more effectively (Padachi, Rojid, and Seetanah, 2007). Robinson (2000) believes that the supply of internet banking services enables banks to establish and extent their relationship with the customers. There are other advantages to banks offering Internet banking such as development of non-core products (examples insurance and stock brokerage), as an expansion strategy, improve market image, and better and quicker response to market evolution (Jayawardhena and Foley, 2000).

A number of studies document the benefits of Internet banking for customers. Ghosh (1998), Hodgetts, Luthans, and Slocum (1999) reveal that the overriding benefits of e-business are a financial institution's capability to establish direct links to almost anyone, anywhere, to deliver new products and services at a low cost; adjust quickly to customers' needs; and become faster in gathering, analyzing, synthesizing, and sharing information. Internet banking offers customers time saving and the ability to access bank services from a variety of locations (Karjaluoto, Marrila and Pento, 2002). Internet banking allows bank customers to have the freedom to perform their financial activities at their convenience (Siritanachot, 2008). Internet banking is also perceived by consumers to be easy and user friendly (Karjaluoto, 2002 a, Gerrard and Cunningham 2003).

In spite of the identified benefits Internet banking offers, some bank customers still pay their bills in more traditional ways as there are some factors slowing down customers' adoption of Internet banking services (Laukkanen, Sinkkonen, Kivijärvi and Laukkanen, 2007). Consumers normally respond to innovation changes at a slower pace as they need to adjust their existing preferences and practices (Ram, 1987). Thus, successful innovations may be initially resisted as the adoption process can start only after the initial resistance has been overcome (Ram 1987, 1989; Bagozzi and Lee, 1999).

Based on the literature review and the results of the focus group discussions, this study has identified the following factors that are hypothesized to influence consumers' adoption of Internet banking: (1) Perceived security, (2) Internet

experience, (3) Marketing exposure, (4) Internet skills, (5) Web design/features, (6) Reliability, (7) Internet Prestige, and (8) Demographic characteristics.

2.2 Perceived Security Factor

Internet banking provides alternatives for a faster delivery of banking services to a wider range of customers (Oghenerukevbe, 2008). However, the increasing popularity of Internet banking attracts the attention of both legitimate and illegitimate online banking practices (Oghenerukevbe, 2008). Further, Internet banking is a trust-based system, which means the theft of customers' personal identity information can cause customers to lose their confidence and trust in the system and their bank (Altintas and Gürsakal, 2007). In addition, Internet fraud or deception can negatively affect customers' opinions on the Internet banking safety and security provided by the banks (Altintas and Gürsakal, 2007). Criminals can also focus on stealing a user's online banking credentials because the username and password combination is relatively easy to acquire, making it possible to fraudulently access an Internet banking account and commit financial fraud (Oghenerukevbe, 2008). Thus, perceived security has been widely recognized as one of the main barriers to the adoption of internet innovation in financial services (Mattila and Mattila, 2005). Mattila and Mattila (2005) suggest that banks offering Internet banking must first convince their customers that the internet is secure as a medium.

Laforet and Li (2005) discover significant security differences between those customers using online banking and those who do not, and emphasize that the hackers and fraud aspects are important for the non-users. Hackers and fraud actions are known as computing environment crimes (Altintas and Gürsakal, 2007). Within these

crimes, electronic funds may be transferred, or identities may be stolen, and in both situations the user's computer is both a target and a tool (Newman and Clarke, 2002). Kaynak and Harcar (2005) observe that security problems are the most important reason given for not using online banking by sample respondents. Kaynak and Harcar (2005) show that security problems such as hackers and fraud are determining factors in selecting in Internet services. Trust and security are important factors supporting a positive view of Internet banking service quality (Altintas and Gürsakal, 2007).

A number of internet user studies are also investigating why phishing attacks are so effective against computer users. In the field of computer security, phishing is the criminally fraudulent process of attempting to acquire sensitive information such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in an electronic communication (Phishing attack, 2009). Young (2006) reveals that online bank fraud losses rose by 55% from $14.5m in the first six months of 2005 to $22.5m and phishing scams were a major contributor to the increase. Phishing is becoming so widespread that its variations are taking on cute names (Singh, 2007). In the initial years, Internet banking was limited to the largest banks, but a new twist, called 'puddle phishing' has the fraudsters going after the customers of regional banks or credit unions (Singh, 2007). Phishing that targets small groups or individual companies is known as 'spear phishing' (Singh, 2007). In India, Espiner (2007) reports that between January and March 2007, 57% of Indian enterprises have received phishing attacks during the last year, and over a third of Indian companies (38%) were attacked by spyware.

In a survey of web users, Friedman, (2002) analyzes the concerns about the potential risks and harms of web usage on consumers and evaluated the web practices of 72 participants. Friedman's (2002) interviews on web security show four screen shots of a browser connecting to a website and asks participants to state if the connection is secure or not secure and to affirm the motivating factor for their appraisal. Friedman, (2002) discover that all 72 participants could not tell if a connection was secure and that they were at risk. Jagatic, Johnson, and Jackobsson's (2005) study on how successful phishing attacks and how phishing attacks from a trusted site are more successful at compromising a user's sensitive information than sites that are not trusted. Jagatic et al. (2005) note that a social context makes phishing attacks far more successful. For example, phishing emails were sent to phishing sites and asked for a student's university username and password, and the information was then validated (Jagatic et al., 2005). Approximately 72% of the subject's usernames and password were compromised (Jagatic et al., 2005).

Software warnings do not provide a complete solution to phishing attacks, Amer and Maris (2006) evaluates the motivational strength of software warnings and shows that the users' dismissed warnings without reading them after viewing the warnings multiple times. This behavior continued even when using a similar but different warning in a different situation (Amer and Maris, 2006). A concern for customers' Internet banking safety practices has motivated some organizations to mount phishing attacks against their own members, with the goal of teaching them to protect themselves (Oghenerukevbe, 2008).

Chiemeke, Evwiekpaefe, and Chete (2006) investigate the possibility of Internet banking adoption and show that the main factors that inhibit the adoption of Internet banking are security and inadequate operational facilities which include proper telecommunications and power supply. Bauer and Hein (2006) confirm that perceived risk is the most important factor that makes customers reluctant to adopt Internet banking. In addition, older customers are less likely to adopt Internet banking whereas younger customers tend to be early adopters because they are willing to tolerate a high risk (Bauer and Hein, 2006). Berger and Gensler (2007) agree and support Bauer and Hein's (2006) findings that online banking customers tend to be young, have white collar jobs, high personal income, higher telecommunication usage, and willing to accept certain risks.

2.3 The Internet Experience Factor

The World Wide Web can change human behavior and human interactions to a very large extent (Kamineni, 2002). The Internet provides both firms and consumers with new methods for communication (Kamineni, 2002). For instance, the Internet provides consumers with access to rich new information sources and with the potential to make better-informed decisions (Kamineni, 2002).

According to Al-Ghamdi (2009), the experience of consumers may affect trust when they purchase products or services online in the United Kingdom. In this context, consumer may not rapidly adopt Internet banking due to a lack of understanding and knowledge about the Internet (Corritore, Kracher and Wiedenbeck, 2003). Organizations must foster customer trust in their productions to remain profitable (Harridge-March, 2006). Gerrard, Cummingham, and Devlin (2006) find that

customers who have never purchased products over the Internet are more likely to continue to use traditional ways of sourcing their banking services. Agarwal, Sambamurthy, and Stair (2000) argue that the familiarity with one software may increase consumers' belief in her/his capability to use another software. Igbaria and Iivari (1995) indicate that experience is strongly and significantly correlated with self-efficacy. Also the individuals' prior experiences and their past interaction with systems can form their self-efficacy and their confidence to use an advanced technology (Agarwal et al., 2000).

Research shows that an Internet banking experience includes online consumer behavior and online service adoption factors. Internet banking experience is an important factor that affects consumers' intentions to use Internet banking, and consumers' attitudes towards using the Internet banking system (Lichtenstein and Williamson, 2006). Jiang, Hsu, Klein, and Lin (2000) consider that the more experienced an Internet user is, the more likely they are to adopt new Internet technologies. Hoppe, Newmam, and Mugera (2001) reach the same conclusion and find that users who are more experienced at using the Internet are more likely to adopt the technology than those consumers who have not had much exposure to the internet. In addition, a simple lack of experience and knowledge can hold back adoption; firms with higher usage intensity of information technology may have a higher probability to adopt Internet banking than less experienced firms (Speece, 2000). Karjuoto et al. (2002) show that prior computer experience, prior technology experience, and prior personal banking experience positively affect consumers' attitude and behavior towards online banking.

2.4 Marketing Exposure Factor

One of the more important contributing factors for adoption or acceptance of any innovative service or product is the creation of awareness among consumers for the service or product (Suganthi, Balachandher, and Balachandran, 2000). In this context, Rogers and Shoemaker (1971) assert that consumers go through a process of knowledge, conviction, decision, and confirmation before they are ready to adopt a product or service. Howard and Moore (1982) and Guiltinand and Donnelly (1983) emphasize the importance of awareness for the adoption of any new innovation. Suganthi, Balachandher, and Balachandran, (2000) indicate that there are increasing promotional efforts on the part of banks to create a greater awareness of Internet banking and its benefit in Malaysia. Prasad and Arumbaka (2009) show that most customers in India do not know how to become an Internet banking user, how to use the technology, and hence feel insecure about Internet facility primarily, due to a lack of marketing effort on the part of banks. Sathye (1999) also studies the adoption of Internet banking in Australia, and finds that security concerns and a lack of awareness stand out as the main reasons for the failure to adopt Internet banking by sample respondents.

Al-Sukkar and Hasan (2004) note that a lack of awareness reduces the adoption rate of Internet banking services in the Middle East. Consumers are not fully confident with using ATM cards and telephone banking as the Internet banking services are still widely unaccepted (Al-Sukkar and Hasan, 2004). Creating greater awareness by showing customers the benefits of using new systems may encourage customers to adopt Internet banking transactions (Al-Sukkar and Hasan, 2004).

Lichtenstein and Williamson (2006) show that many Internet non-users mentioned not having known or thought about Internet banking, nor have they seen the technology advertised in Australia. Some respondents remarked that they did not bank through the Internet because they believed Internet banking is too complicated or of little interest. This lack of awareness suggests the need for banks to create interest in Internet banking, perhaps through an aggressive marketing campaign targeting non adopters (Lichtenstein and Williamson, 2006).

2.5 Internet Skills Factor

Any new technology is usually picked up by the early adopters who have Internet access and knowledge about the facilities such as those provided by a bank on the Internet (Prasad and Arumbaka, 2009). However, some consumers do not know how to become an Internet banking user, and some consumers do not have the required PC skills and facilities needed to do Internet banking (Prasad and Arumbaka, 2009).

Kim, Widdows, and Yilmazer (2005) note that some consumers have more ability to use banking technology and computer software for managing money than other consumers. Consumers with increased computation ability may adopt Internet banking more easily and their ability may also improve their efficiency in the use of Internet banking. In addition, they may need to invest less time and money to learn Internet banking (Kim et al., 2005). Consumers who have no experience and skill in the use of banking technology and computer software may not recognize the benefits of Internet banking. However, these customers may hesitate to adopt Internet banking as they need to invest more time and money to learn Internet banking (Kim et al., 2005).

In Anakwe, Simmers, and Anandarajan's (2002) research paper, the authors show that general Internet skills of employees are related to the three indicators of Internet usage: daily use of the Internet, frequency of use, and participating in business activities such as marketing and communication. Thus, the more internet skills an employee has, the greater their daily use of the Internet; the more time they spend on the Internet, then the more activities (such as marketing and communication) they perform using the Internet (Anakwe et al., 2002).

Several researchers have discussed about the virtual requirement of computer ownership and operational skills for Internet adoption. For example, Centeno (2003) notes that Internet banking requires that the user must have a minimum level of Internet skills. This may explain why some older customers are hampered by a lack of computer skills and the need to be educated on basic Internet functions required to conduct online banking (Al-Alawi, 2005).

Black, Lockett, Winklhofer, and Ennew's (2001) study reveal that the adoption of Internet banking depends on the compatibility of the new channel with the individual's personality, computer skills, and the opportunity to try the service offered. Gerrard and Cunningham (2003) find that consumers who are non-adopters of Internet banking could be differentiated by their low (or poor) computation proficiency and computer skills. In Lichtenstein and Williamson's study (2006), the authors point out that a person's Internet self-efficiency, such as Internet skill, will affect the decision whether or not to adopt Internet banking. Internet users generally expressed confidence in their ability to use the Internet – a confidence acquired from multiple positive experiences and acquired familiarity with the Internet channel (Lichtenstein

and Williamson, 2006). The results show that the non-user of Internet banking services have lower Internet skills, lack of access, and lack of experience (Lichtenstein and Williamson, 2006). Furthermore, Polatogu and Ekin (2001) reach a similar conclusion with Lichtenstein and Williamson (2006). The authors show that the consumers' knowledge and skills about the Internet and Internet banking are important to the adoption of Internet banking. If the knowledge and skills about the Internet and Internet banking are low, the adoption rate will low. The more knowledge and skills a consumer possesses about Internet banking, the easier it is for the consumer to utilize Internet banking (Polatogu and Ekin, 2001).

2.6 Web Design/Features factor

The Internet is the cheapest delivery channel for banking products (Sathye, 1999; Robinson, 2000; Giglio, 2002), and allows banks to reduce their branch networks and downsize the number of service staff (Karjaluoto, Koivumaki and Salo, 2003). The Internet has an ever-growing importance in the banking sector due to the advantages the technology brings to both the banks and their customers. However, not all financial institutions that adopt Internet banking are successful with the technology (Hernández-Ortega, Jiménez-Martínez, and Hoyos, 2007). An inadequate website design is often cited as major deficiency in Internet banking (Hernández-Ortega et al., 2007).

A navigable website allows users to find the information they want and carry out their operations quickly (Hernández-Ortega et al., 2007). Therefore, success on the Internet requires the provision of adequate service products through a well designed website (Hernández-Ortega et al., 2007). The website becomes the new sales outlet and the

site represents the image of a bank (Hernández-Ortega et al., 2007). An adequate Internet banking strategy must include the design and construction of a visible website on the internet that the users can navigate easily (Serrano-Cinca, Fuertes-Callén, and Gutierrez-Nieto, 2007).

Internet banking users expect the internet to offer many advantages that are not available in traditional banking (among others, time saving, speediness and economic benefits) (Karjaluoto, 2002 b; Goi, 2007). All these advantages must be supported by a readily accessible and user friendly website (Hernández-Ortega et al., 2007). Hoffman and Novak (1996) consider the website as the best platform to attract more visitors and reach new customers because the site can promote a bank's products, services, and image. Thus, website design is one of the most important channels of transmission for banks (Liu and Arnett, 2000; Zhang and von Dran, 2001; Liao, Huang and Chen, 2007).

Navigability refers to the usability and operability which a website must offer its customers (Hernández-Ortega et al., 2007). The characteristics of navigability include ease of search, which reflects the website's capacity to help users to find the information they require (Huizingh, 2000). The fewer clicks necessary for a user to find an object, and the greater the navigability, the greater the increase is in users' satisfaction (Hernández-Ortega et al., 2007). The ease of navigability increases the probability of obtaining loyal customers (Hernández-Ortega et al., 2007). A poor website design may prevent users from finalizing the desired transaction, and

consequently, they may not revisit the financial entity (Hernández-Ortega et al., 2007).

The navigability of a website is a function of its ease of use, usefulness, and the time customers saved during their interaction period (Hernández-Ortega et al., 2007). Thus, banks must provide e-tools on their website, such as site maps or a permanent site menu, that permit visitors to review these characteristics and to know where they are at any given moment (Clyde, 2000; Hudson, Keasay, and Litter, 2000; Robbins and Stylianou, 2003). Moreover, these navigation tools help users to keep a mental map of their position and understand how different pages or sections are interrelated (Bauer and Scharl, 2000; Cao, Zhang, and Seydel, 2005). For example, "Search for keywords", "Back to top", "Home" buttons are important features for Internet banking users (Bauer and Scharl, 2000; Cao et al., 2005).

2.7 Reliability Factor

Leelapongprasut, Praneetpolgrang, and Paopun (2005) indicate that in Thailand, the three most important dimensions of quality in Internet banking are: reliability, serviceability, and durability. Reliability involves consistency of performance and dependability which means that the banking firm performs the services right the fist time and honors its promises (Khan, 2007). Reliability involves accuracy in billing and information, keeping records correctly, performing the service at the designated time (Zeithaml, Parasuraman, and Malhotra, 2002; Mckinney, Yoon, and Zahedi, 2002). Reliability is associated with the technical functioning of the e-banking site, particularly the extent to which the site is available and functioning properly.

Sathye (1999) and Polatoglu and Ekin (2001) find that the reliability dimension is an important factor for consumers who use electronic banking. Furthermore, Sathye (1999) and Liao and Cheung (2002) find that reliability is positively related to the use of electronic banking.

2.8 Internet Prestige

Prestige Internet banking includes among other factors such as status and high standing among peers and self concept. Internet service is not widely available to the Chinese society at large and is expensive to register with an internet provider. Most banks in China have not aggressively promoted Internet banking to the bank customers. Bank consumers also cited various types of costs which have inhibited their use of Internet banking, such as cost of buying a computer, the monthly fee of an Internet connection, and the monthly fee charged by the bank (Lichtenstein and Williamson, 2006). Mols (1998) and Sathy (1999) studies show that some consumers could not afford a personal computer (PC) and this prohibited the adoption of Internet banking.

Young (2006) shows that affluent and highly educated groups generally accept changes more readily. Thus highly educated consumers may be more likely to adopt Internet banking services than low educated consumers. In addition, using Internet banking gives these consumers prestige among their peers. It is also part of the social scene of today's technology driven society. Sarro (2002) argues that customer profiles of Internet banking users are not substantially different between one country and another, as most clients are young people with a college education, a steady job and income. Price Waterhouse Coopers (2000) state that the typical Internet banking

customer is aged between 25 and 35 years, has medium to high income, is salaried, with a medium to high cultural level, and likes to make his/her own financial decisions. Al-Somali, Gholami, and Clegg (2008) discover that trust and education influence customers' attitudes towards using Internet banking. In addition, Flynn and Goldsmith's (1993) study profiled the Internet consumer and found that innovators normally belong to the high income group are also initial consumers of the Internet.

2.9 Demographic Characteristics

Demographic factors are frequently used as a basis for understanding consumer characteristics (Block and Roering, 1976; Lewis, 1981). The popularity of using demographic factors is attributable to the observed relationship between the consumption of certain products and certain demographic factors (Block and Roering, 1976). The demographic characteristics include age, sex, income, occupation, education (Kotler, 1982).

In Murillo and Roisman's (2004) report, the authors indicate that a bank's decision to provide Internet banking depends on the characteristic of the market the bank serves, such as the demographic characteristics of potential customers, as well as whether the bank is located in a metropolitan area. Demographic characteristics also play a vital role in understanding the buying behavior of consumers in different segments, and when the characteristics are identified, they enable companies to develop products and services according to customers' specific requirements, tastes, and preferences (Sakkthivel, 2006). In addition, for Internet banking service adoption, banks must consider a user's demographic characteristics to offer the correct range of service products.

Several studies have been conducted to profile the Internet consumer's demographic characteristics and the results of these studies suggest that innovators who belong to the high income category are normally initial users of the Internet (Flynn and Goldsmith, 1993; Gan, Clemes, Limsombunchai, and Weng, 2006). Further, Sakkthivel (2006) reveal that the profile of an Internet user tends to be young, male, well educated, and earning an above-average income.

According to Polatoglu and Ekin (2001) and Howcroft, Hamilton, and Hewer (2002), demographic characteristics that describe typical electronic banking customers include young, affluent, and highly educated. A Finnish study (Mattila, 2003) reveals Internet banking users are relative wealthy, highly educated, and are in higher professions. Awamleh and Fernandes (2006) also find that in United Arab Emirates, young affluent and highly educated groups generally accept technological changes more readily.

Chapter 3 Research Hypotheses and Model

3.1 Introduction

The chapter describes the hypothesis relating to the research objectives and the theoretical research model.

3.2 Research Objectives

Today, Internet banking is growing rapidly as a consumer banking preference and an increasing number of financial institutions are offering Internet banking. Financial institutions can take advantage of the Internet technology to offer cost-effective banking solutions. However, Internet banking has not been widely used in Zhengzhou, China. Therefore, marketers of banks and financial institutions need to make an effort to understand the factors which lead to the adoption of Internet banking. Thus, it is important to analyze the Internet banking landscape in Zhengzhou, China. The research objectives for this study are:

1) Identify which factors affect bank consumers' adoption of Internet banking in Zhengzhou, China.
2) Determine the most important factors that are associated with the adoption of Internet banking in Zhengzhou, China.
3) Determine the impact that the demographic characteristics have on Internet banking in Zhengzhou, China.

3.3 Limitations of Adopting Internet Banking in Zhengzhou, China

There are few factors that discourage the development and the use of Internet banking in China. While, the number of Internet users in China is increasing in recent years, Internet banking is still quite foreign for many people due to the digital divide, the

different levels of Internet experience, and internet exposure. Historically, the main reasons for Internet users to use the Internet were communication and obtaining information (Feng et al., 2008). Therefore, the social acceptance for using the Internet to conduct banking business, such as online payment, is not widespread in China's banking market (Feng, Ying, and Jing, 2008). The Internet banking market is also different from the traditional banking market. For example, the laws, regulations and private policies about Internet banking are incomplete (Feng et al., 2008). The slow establishment of the laws, regulations, and private policies discourage banks to further develop their Internet banking business (Feng et al., 2008). The "virtual" attribute in Internet banking must have a complete trustable system such as those in the traditional banking system (Feng et al., 2008). In China, "trust" is the most important factor that tends to discourage bank customers from adopting Internet banking (Feng et al., 2008).

3.4 Factors that influencing Adoption of Internet Banking in Zhengzhou, China

This study identifies the factors that influence the adoption of Internet banking in Zhengzhou, China. The most to the least important factors influencing consumers' decisions to adopt Internet banking services in Zhengzhou are also discussed. A major reason why Internet banking has not been widely adopted by Chinese bank consumers is the trust factors. The activities of hackers and the perceived unsafe nature of the Internet are frequently highlighted in the mass media which indirectly affects consumers' trust level of Internet banking (Khalil, 2008). In Khalil's (2008) study, in addition to the trust factor, the author also examines other factors that influence bank customers' intention to use Internet banking, such as perceived ease of use, and

perceived usefulness of Internet banking among the Malay and Chinese Malaysian ethnic groups. The results of Khalil's (2008) study show that trust, perceived ease of use, and perceived usefulness, all have positive effect on the intention to use Internet banking for both ethnic group.

In Li and Zhong's (2005) study of virtual banking adoption in China, the authors show that Internet accessibility, awareness, security concerns, risk, attitude toward change, computer and Internet access costs, trust in one's bank, ease of use and convenience are the major factors affecting the adoption of Internet banking in China. Evidence also show there are greater promotional efforts on the part of banks to create greater awareness of virtual-banking and its benefits that are important for the success of e-banking services patronage (Li and Zhong, 2005). However, in view of the security concerns and the risk involved in e-banking transactions, the more affluent members of the sample appear to have a greater inclination towards virtual-banking in Li and Zhong's (2005) research.

In Hua's (2009) study on the Chinese Internet banking market, the author examines the factors that influence the users' behavioral intention to use Internet banking. The findings of Hua's (2009) study reveal different impacts of privacy policy, perceived ease of use, and security on using Internet banking. Due to the dominant impact of security in influencing Internet-related services, including online shopping and banking (Laforet and Li, 2005), security is still the biggest concern for bank users in the acceptance of Internet banking in China (Hua, 2009). The author shows that both perceived ease of use and privacy have a significant impact on the acceptance of online banking (Hua, 2009). The findings identified an urgent need for a privacy and

security policy to protect consumers' personal and financial information (Hua, 2009). Users' behavioral intention to use the online banking website changes dramatically with the existence of a specific privacy policy (Hua, 2009). The findings also show that perceived ease of use is another important factor influencing users' adoption of Internet banking (Hua, 2009). The results show that the correlation between the covariate online shopping experience and the Internet banking adoption is statistically significant which support that online shopping is highly correlated with Internet banking adoption (Hua, 2009). Furthermore, online shopping is facilitated by online payment, which is one of the main functionalities of online banking, and both factors are positively correlated (Hua, 2009).

In this study, the decision to adopt Internet banking is hypothesized to be a function of the seven variables (measured on a 7-point Likert-type scale) and demographic characteristics. The variables include Perceived Security, Internet Experience, Marketing Exposure, Internet Skills, Web Design/Features, Reliability, and Internet Prestige (see Figure 1).

3.5 Hypotheses Relating to Research Objective One and Two

3.5.1 Perceived Security

A major concern about virtual security is one common reason why consumers are unwilling to use Internet banking services (Madu, 2002). Most customers are not comfortable with the infrastructure of Web security systems (Black, Lockett, Winkhofer, and Ennew, 2001). Internet banking security is one of the important future challenges for banks to mitigate the fear and risks perceived by customers who use the Web for financial transactions (Cunningham, 2003). For example, Davidow (1986)

shows that Internet banking is a technology-enabled channel and consumers' perceive the use of Internet banking as a risky decision because technology-enabled services exhibit pervasive technological breakdown, unfamiliar and ambiguous stimuli. In addition, security violation can lead to various problems such as destruction of operating systems, disruption of information access, or intrusion of the customers' accounts (Min and Galle, 1999).

Jun and Cai (2001) identify key quality attributes of the Internet banking products and services by analyzing Internet banking customers' experiences. The authors find that the quality of Internet banking service encounter involves subjective evaluation factors, such as security, accuracy, and content. Lichtenstein and Williamson (2006) show that Internet banking users who have a technical background and understand security technology have higher levels of confidence in Internet security than users without these skills. Liao and Wong (2007) argue that perceived security has a positive effect on customers' relationships with e-banking. Furthermore, Sathye (1999), Liao and Cheung (2002) show that the more secure that consumers perceive Internet banking to be, the more likely the consumers are to use Internet banking. Therefore, the following relationship is hypothesized:

Hypothesis 1: Perceived security is positively related to adoption of Internet banking.

3.5.2 Internet Experience

Crisp, Jarvenpaa, and Todd (1997) show that prior web experience impacts on consumers' adoption of computer and technology in general. Kirda and Kruegel (2006) maintain that an increase in phishing attacks negatively impacts consumers' adoption of Internet banking services. Jiang, Hsu, Klein, and Lin (2000) consider that the more experienced an Internet user is, the more likely he or she is to adopt new Internet

technologies. Hoppe, Newmam, and Mugera's (2001) reach the same conclusion and find that users who are more experienced at using the Internet are more likely to adopt the technology than those consumers who have not had much exposure to the Internet. Karjuoto et al. (2002) show that prior computer experience, prior technology experience, and prior personal banking experience have a positive affect on attitude and behavior towards online banking. Therefore, the following relationship is hypothesized:

Hypothesis 2: Internet experience is positively related to adoption of Internet banking.

3.5.3 Marketing Exposure

Guiltinand and Donnelly (1983) emphasize the importance of awareness before adoption of any innovative products. An innovative product or service will not enjoy great success unless consumers are aware of its existence and the potential benefits it offers (Polasik and Wisniewski, 2009). Sathye (1999) and Polatoglu and Ekin (2001) show that consumer knowledge has an effect on Internet banking adoption. Knowledge refers to the consumers' awareness of each type of electronic banking channel in the marketplace, the consumers' awareness of the benefits associated with electronic banking, and the consumers' knowledge of how to use electronic banking.

Furthermore, Sathye (1999) finds that the lack of awareness about Internet banking and its benefits, including the perception of the technology being non-user friendly contribute to the non-adoption of Internet banking. Al-Sukkar and Hasan (2004) note that a lack of awareness reduces the adoption rate of Internet banking services in the Middle East and creating greater awareness may encourage customers to adopt Internet banking transactions. Therefore, the following relationship is hypothesized:

Hypothesis 3: Marketing exposure is positively related to adoption of Internet banking.

3.5.4 Internet Skills

Lee and Lee's (2001) study shows that Internet banking adopters tend to be more highly educated, more wealthy and younger with good knowledge of computers and familiarity with Internet usage. Yiu, Grant, and Edgar (2007) study the factors affecting the adoption of Internet banking in Hong Kong, the authors point out that the lack of computer skills is the one of the important factors that affects bank customers' adoption of Internet banking services. Polatoglu and Ekin (2001) note that consumer' knowledge and Internet skills are important in Internet banking adoption. Karjaluoto, Mattila, and Pento's (2002 b) empirical results suggest that non-Internet banking users consider Internet banking as difficult to use because the non-Internet banking users consider computers difficult to operate. In Al-Alawi's (2005) study, the author shows that the non-Internet banking users such as elderly customers are hindered by lack of computer skills and they need to be educated on basic computer skills to conduct Internet banking. Additionally, Gerrard and Cunningham (2003) find that consumers who are non-adopters of Internet banking will be disadvantaged by their lower computation proficiency and computer skills. Therefore, the following relationship is hypothesized:

Hypothesis 4: Low Internet skill is negatively related to adoption of Internet banking.

3.5.5 Web Design/Features

Doll, Raghunathan, Lim, and Gupta (1995) show that product information content on the web design and layout are important factors affecting customers' satisfaction and the consumers' adoption choice of Internet banking. According to Lin and Lu (2001),

despite the popularity of the Internet, many consumers resist using Internet banking services due to poor Web site designs and heavy traffic loads.

For a financial entity to be successful in the electronic market, the financial entity must design a navigable website that allows fast and easy interaction with its customers (Hernández-Ortega et al., 2007). A navigable website allows users to find the information they want and conduct their operations quickly (Hernández-Ortega et al., 2007). The fewer the number of clicks, the greater the probability that a transaction being completed. Thus, the financial entity will increase the users' satisfaction (Hernández-Ortega et al., 2007) which may increase the adoption rate of Internet banking services. Therefore, the following relationship is hypothesized:

Hypothesis 5: Web design/features are positively related to adoption of Internet banking.

3.5.6 Reliability

Reliability of services is concerned with the consistence of performance and proper functionality of the service, technical functioning of the service sites, such as availability, and ability to perform the promised service accurately. This includes accuracy in billing and information, keeping records correctly, and performing the service at the designated time (Zeithaml, et al., 2002; Mckinney, et al., 2002).

Sathye (1999) and Polatoglu and Ekin (2001) find that the reliability dimension is an important determinant for consumers who use Internet banking. Rotchanakitumnuai and Speece (2003) show the users of Internet banking in Thailand have more confidence in the reliability of the system, whereas non-Internet banking users are much more service conscious, and do not trust financial transactions made via Internet channels. Furthermore, Sathye (1999) and Liao and Cheung (2002) find that reliability

is positively related to the use of Internet banking. Therefore, the following relationship is hypothesized:

Hypothesis 6: Reliability is positively related to adoption of Internet banking.

3.5.7 Internet Prestige

Rogers (1983) identifies the characteristics of earlier adopters of innovation as having higher levels of education, social status, self esteem and higher incomes. Polatoglu and Ekin (2001) show that the Internet banking users include young, affluent, and highly educated. A Finnish study shows that Internet banking users is middle aged, relatively wealthy and highly educated (Mattila and Pento, 2001).

Prestige Internet banking can also be related to social status of individual. It reflects the lifestyle in a social hierarchy. People who achieve a high hierarchical social status often display the following qualities: confidence, intelligence, affluent, and highly educated groups. It is associated with the ability of individuals to live up to some set of ideals or principles regarded as important by the society or some social group within it (Wikipedia). Thus, many Chinese bank customers would like to adopt Internet banking to achieve some standing among peers even though Internet banking can be costly. Therefore, the following relationship is hypothesized:

Hypothesis 7: Internet Prestige is positively related to adoption of Internet banking.

3.6 Hypotheses Relating to Research Objective Three

3.6.1 Demographic Characteristics

Consumers' demographic characteristics have been widely used to distinguish how one segment of consumers differs from another segment (Kotler, 1982). In assessing Internet banking, demographic characteristics, such as age, marital status, gender,

occupation, annual income, and educational qualification have an affect on a consumers' use of Internet banking.

Barnett's (1998) findings show that the younger the consumers, the more comfortable they are with using Internet banking compared to older consumers who are more likely to be non-Internet bankers. Similarly, Karjaluoto (2002 a) demonstrates that Internet banking users are younger than non-Internet banking users. These findings imply that older consumers are the less likely to favor Internet banking.

In regards to marital status, Stavins (2001) identifies that married consumers are more likely to adopt Internet banking. Therefore, the following relationships are hypothesized:

Hypothesis 8: Younger age (under the age of 35) is positively related to adoption of Internet banking.

Hypothesis 9: Marital status is positively related to adoption of Internet banking.

The segmentation of gender characteristic also influences preferences for Internet banking. Katz and Aspden's (1997) findings show that males are more likely to use Internet banking than females. Similarly, Karjaluoto (2002 a) finds that Internet banking users are dominated by males. Therefore, the following relationship is hypothesized:

Hypothesis 10: Male consumers are more likely to adopt Internet banking than female consumers.

Munene, Pettigrew, and Mizerski (2005) identify a significant relationship between the respondents' occupations and online banking. The authors show that people in

managerial, administrative, professional, or paraprofessional occupations are more likely to use electronic banking. Similarly, Babiarz and Devaney's (2007) study show that holding a managerial, professional, or technical job is positively related to Internet banking adoption. Hence occupation level has an impact on consumers' choice of Internet banking. It can be postulated that occupation level is positively related to the choice of Internet banking (Stavins, 2001).

Hypothesis 11: Occupation has a positive impact on the adoption of Internet banking.

The evidence that consumers' educational qualification has a positive effect on Internet banking can be found in Al-Ashban and Burney's (2001) and Stavins's (2001) studies. Al-Ashban and Burney (2001) establish that as consumers increase their educational qualification level, their adoption of Internet banking will increase as well. Similarly, Stavins (2001) identifies that consumers with more years of education are more likely to use Internet banking.

Chan (1997) establishes that income is the single most important variable that influences a consumer's use of a credit card. Empirical findings also suggest income positively influencing the adoption of Internet banking (Al-Ashban and Burney 2001; Stavins, 2001; Karjaluoto, 2002 a). For example, Al-Ashban and Burney's (2001) conclude that there is a positive relationship between consumers' level of income and the adoption of Internet banking. Similarly, Stavins (2001) and Karjaluoto's (2002 a) identify that as consumers' income levels increase they are more likely to use Internet banking. Therefore, the following relationships are hypothesized:

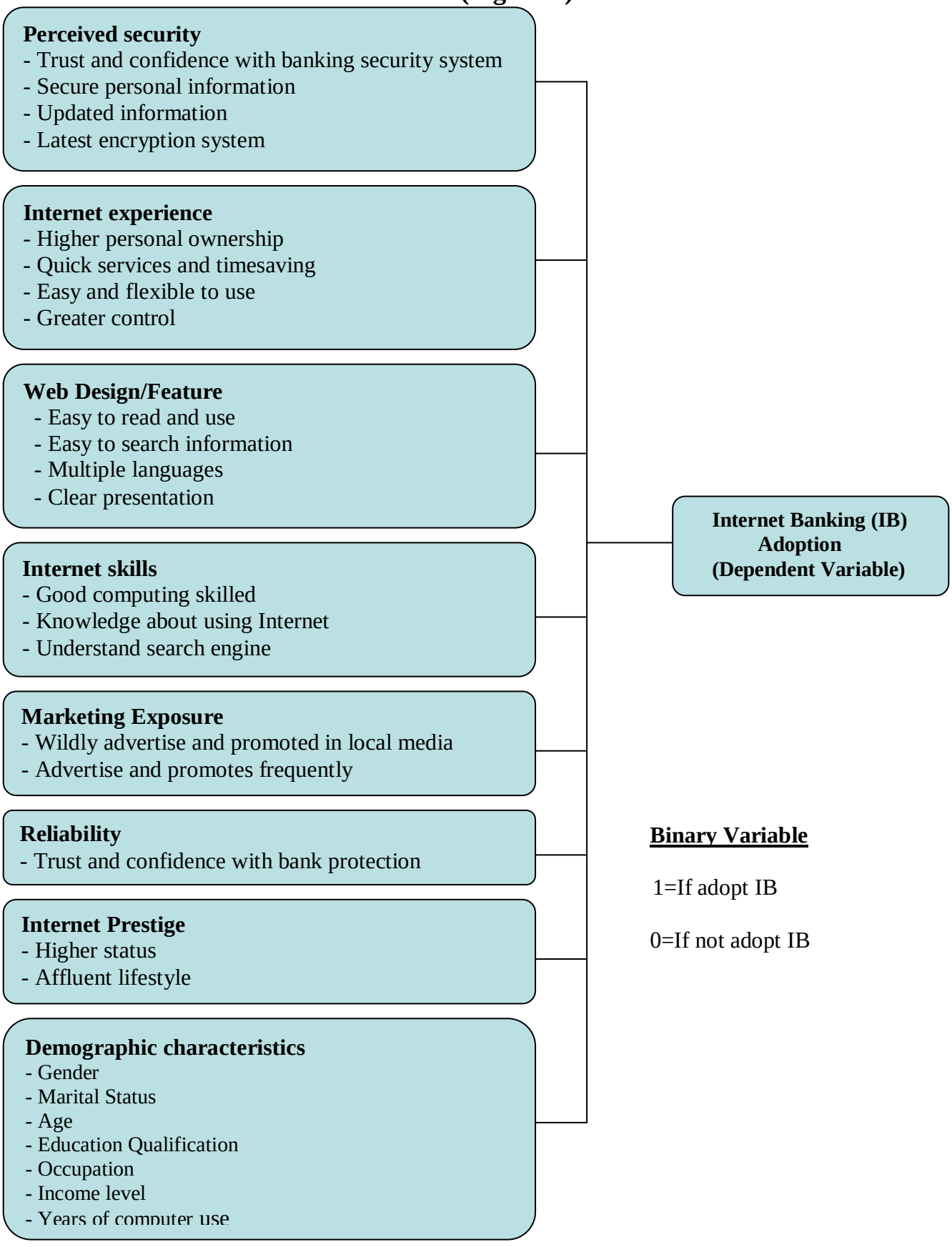
Hypothesis 12: Education qualifications have a positive impact on the adoption of Internet banking.

Hypothesis 13: Income is positively related to adoption of Internet banking.

Hypothesis 14: There are different perceptions of the adopting Internet banking factors between demographic groups.

As a result, 14 hypotheses are formulated and the theoretical research model is presented in Figure 1.

3.7 The Theoretical Research Model (Figure 1)



Chapter 4 Research Methodology

4.1 Introduction

Chapter Four begins with a description of the research methodology used in this study. The empirical framework in this research is based on a quality choice model. A logit analysis was chosen because of the binary nature of the dependent variable. The logit analysis is discussed in detail in Section 4.3. A discussion of the statistical analysis, research design, questionnaire development and format, and construct measurements concludes this chapter.

4.2 Sample Method

The primary data is used in this study collected through a survey questionnaire. The sample is drawn from bank customers in Zhengzhou, Henan Province of China to examine the factors affecting their Internet banking adoption choice. The data is collected from a convenience sample of individuals, irrespective of their Internet banking purpose, gender, occupation, or income. Convenience sampling is used in the study due to the practical difficulties in obtaining the list and information of our target population. Respondents aged less than 18 years are excluded from the survey, as it is perceived they might have encountered difficulties interpreting the survey questions. Customers are approached to participate in the research in front of the shopping malls. We stress clearly “the voluntary participation” criteria before distributing the questionnaire to each participant to fill in.

4.3 Sample Size

In order to make generalizations with confidence about the constructs under investigation, the appropriate sample size has to be considered. According to Sekaran (2003), sample statistics need to be reliable and represent the population parameters as close as possible within a narrow margin of error. For factor analysis, the minimum sample size should be at least five times the number of variables to be analyzed (Hair, Black, Babin, Anderson, and Thatham, 2006). Since there are 56 variables to be analyzed in this study, at least 280 completed questionnaires are required.

For multiple regression analysis, Garson (2006) recommends that the sample size should be at least equal to the number of independent variables plus 104 for testing regression coefficients, and at least 8 times the number of independent variables plus 50 for testing the R-square respectively. Therefore, the 10 independent variables in this study require at least 130 completed questionnaires in order to test regression coefficients and the R-square. However, the actual number of independent variables can only be derived from the factor analysis (Hair et al., 2006).

Furthermore, Crouch (1984, p 142) recommends that "minimum sample sizes for quantitative consumer surveys are of the order of 300 to 500 respondents". Therefore, this study required usable responses of at least 300 questionnaires completed.

4.4 Questionnaire Development

The lack of published research relating to Internet banking adoption choice in Zhengzhou made it necessary to collect primary data to test the eighteen hypotheses and to satisfy the research objectives of this study. The questionnaire is designed

specifically for this study as this research is exploratory, an extensive review of the literature and focus group discussions are used to help identify the factors that consumers use when they decide whether or not to adopt Internet banking services. Initially, the factors derived from the literature review and the focus group discussions were used to assist in developing the questionnaire.

4.5 Questionnaire Format

The survey questionnaire is divided into four sections. The first section is designed to separate which those customers who adopts Internet banking from those customers who do not adopt Internet banking. Sections Two is designed to collect data relating to the factors that may influence consumers' decisions to adopt Internet banking. Section Three is designed to collect data relating to the factors that may influence consumers' decisions to not adopt Internet banking. The last section establishes the demographic and socio-economic characteristics of the bank customers who participated in this study.

4.6 Pre-testing Procedures

To assess the reliability and validity of the questionnaire, a pre-test is conducted. As the questionnaire is developed specifically for this research, pre-testing helps to clarify the items used in the questionnaire. A total of 30 questionnaires are randomly distributed to banking customers aged 18 years and older. The respondents are encouraged to comment on any questions or statements that they thought were ambiguous or unclear. Some minor wording modifications to the questionnaire are made as a result of this process. The final version of the questionnaire is in Appendix 2 (page 154).

4.7 Construct Measurement

The constructs in Section One are measured by nominal scales and interval scales. A weighted Likert scale is used to measure all the constructs in Section Two and Three. Where each scale indicates the respondent's level of agreement to a statement measured on a seven point scale, with '1' being strongly disagree, '7' strongly agree, and '4' neither agree nor disagree with the statement. A seven-point scale can increase the variation and reliability of the responses (Nunnally, 1978). Nominal scale and interval scales are used to measure the constructs in Section Four.

Opposite wordings are used in Section Three as this section pertained to customers who did not use Internet banking. In addition, some questions are randomly placed in section Two and Three to reduce any systematic bias in the responses (Sekaran, 1992).

4.8 Overview of Quality Choice Model

Understanding how people make decisions is important for the design of public policies, marketing strategies, product designs, and business investment decisions. Recent advances in theory and empirical methods have resulted in an improvement in understanding human choice behavior, and the ability to analyze and predict choice behavior.

Models for determining the choice of discrete alternative activities are known as qualitative choice models. A qualitative choice situation is defined as one in which a decision-maker faces a choice among a set of alternatives which satisfy the following criteria (Correa, 2008):

• The number of alternatives in the set is finite.

• The alternatives are mutually exclusive; that is, a person who choose one alternative in the set necessarily implies that the person does not choose another alternative.

• The set of alternatives is exhaustive: that is, all possible alternatives are included, and the person necessarily chooses one alternative from the set.

Any choice situation in which the decision or choice is represented by a continuous variable is not a qualitative choice situation. Basically, qualitative choice models designate a class of models, such as logit and probit, which attempt to relate the probability of making a particular choice to various explanatory factors and calculate the probability that the decision-maker will choose a particular choice or decision from a set of choices or decisions, given data observed by the researcher (Ben-Akiva and Lerman, 1985). Logistic regression predicts the probabilities of choices made and assesses how well the independent variables explain the dependent variable (Pallant, 2005). The probabilities must be between zero and one.

4.9 Qualitative Choice Applications

Qualitative choice models determine the probability (or likelihood) that a decision-maker, with a given set of attributes, makes one choice rather than the alternative (Liao, 1994). The qualitative choice model is designed for describing decision makers' choice in certain types of situation. These situations arise in a variety of contexts, such as transportation, energy, telecommunications, housing, criminology, and labor (Train, 1993). Models for determining discrete choice such as whether to participate or not to participate in state or local government programs, and to favor or not to favor a particular political party are known as qualitative choice

models. Therefore, the decision to use or not to use Internet banking also falls into the qualitative choice framework.

Stynes and Peterson (1984) use the qualitative choice approach to model recreation behavior in their analyses of choice of activity or choice of sites. Amemiya (1981) identifies an important reason for the increasing use of qualitative choice modeling in economic and behavioral applications: the existence of many naturally discrete variables. Economic agents are often observed making choice between activities rather than making choice involving levels of participation in markets. As a result, qualitative choice models have been used in analyzing participation in a variety of activities.

In McFadden's (1973) study, the author uses a joint multinominal logit choice model to consider the problem of modeling disaggregate choice of housing location when the number of disaggregate alternatives is impractically large, and when the presence of a structure is similar between alternatives invalidates the commonly. Artís, Ayuso, and Cuillén (2002) use a logit analysis to assist in the detection of fraudulent claims in the insurance industry. Furthermore, Bartoloni and Baussola (2001) use a logit analysis to explain technological diffusion, whether or not a firm introduces new process (or product innovations).

In the study of welfare evaluations in contingent valuation experiments with discrete responses by Hanemann (1984), the author addresses the issue of how the logit model should be formulated to be consistent with the hypothesis of utility maximization and how measures of compensating and equivalent surplus should be derived from the

fitted models. The conclusion shows the methodology for measuring compensating and equivalent surpluses from simulated or hypothetical market experiments involving discrete responses by survey participants. Statistical models used to analyze these responses assume a random-utility maximization framework in which measures of welfare surpluses are ambiguous.

Schmidt and Strauss's (1975) research on the economic analysis of employment patterns by race and sex typically involved construction of indicators of relative employment shares for the pertinent race-sex groups in various occupations, given the average level of educational attainment in the occupation. The authors used a multiple logit model to estimate the occupation attainment. In the model, race, sex, educational attainment and labor market experiences are the explanatory variables (Schmidt and Strauss, 1975). The results show that among people of equal education and experience, race and sex strongly influence what type of a job these people obtain (Schmidt and Strauss, 1975).

Hardy and Shuey (2000) utilize two logit models in their study to estimate if the employees participated in employer-sponsored programs, and whether the respondents spent or saved their cash settlement respectively. The results of the Hardy and Shuey's first logit model show women are less likely to precipitate in employer-sponsored pension plans. The results from the second logit model identified women as more likely to save the settlement, this is a net gender difference that increased with age at which the settlement is received (Hardy and Shuey, 2000).

In qualitative choice analysis, a consumer faces a choice among a set of alternatives, and has to decide the best alternative (Train, 1993). Terry and Michael (1995) exploit a new method for estimating probit models from panel data to infer market structure that can be displayed in a few dimensions, even through the model can represent every possible vector of purchase probabilities. Ruffer and Holcomb (2001) examine a bank's expansion decision using a probit model to determine whether the bank would expand by acquiring an existing branch or building a new branch. Harvey and Walls (2003) employ a probit analysis to analyze representative consumers' preference to purchase counterfeit good versus genuine goods.

4.10 The Theoretical Framework

4.10.1 The Empirical Framework

Internet banking is the latest technology which has advantages in saving time and cost, and can be regarded as one of the inputs for banking transactions (Kim, Widdows, and Yilmazer, 2005). In Kim et al.'s (2005) study, the authors estimate an adoption model for Internet banking and show that consumers' ability, attitude, and the opportunity cost of time play significant roles in their decisions to adopt Internet banking. Younger and well-educated consumers are more likely to adopt Internet banking. Their results also show age effect varies across education groups (Kimet al., 2005). Kim et al.'s (2005) study also investigates the differences across households that use checks, ATM or debit card, direct payment, and Internet banking as payment methods. The findings show that there are significant differences in terms of the demographic characteristics of the households that use different payment methods. Chang (2002) shows Internet banking has a low transaction cost and a high speed services when compared to traditional banking services. Anguelov, Hilgert, and Hogarth (2004) also

show that Internet banking technologies allow consumers easier access to financial services, lower bill-paying, and time saving in managing their finances. At an advanced level, Internet banking is the enabling of 'transactional' services to customers over the internet. 'Transactional' services involve ordering cheque or deposit books, checking bank statements and account balances, undertaking banking transactions, and opening new bank accounts (Giannakoudi, 1999; Jayawardhena and Foley, 2000). In general, consumers respond differently to Internet banking because they have different technology capabilities, opportunity costs of time, and attitudes towards Internet banking (Kim et al., 2005).

In the study of product innovation by Trajtenberg (1989, 1990), the author introduces a measurement for innovations. The author reveals that despite its prevalence and intuitive appeal, the distinction between product and process innovations is by no means unambiguous. Many advances primarily affect production processes and are consist with quality improvements in capital goods, whereas others are embedded in products that can serve both in production and in final consumption (such as personal computers, communication systems and devices) (Trajtenberg, 1989, 1990). In the methodology section, the author also uses a multinomial logit model to analyze innovations concerning CT scanners.

For many commodities and services, the individual's choice is discrete and the traditional demand theory has to be modified to analyze such choice (Ben-Akiva and Lerman, 1985). Trajtenberg (1989, 1990) points out that in the discrete choice models of demand for different products consumers will maximize their utility (Trajtenberg, 1989, 1990).

In Kim et al.'s (2005) study, the authors use Trajtenberg's (1989, 1990) framework and assume that a consumer will accept a new product if the difference between the utility of the new product (Unew) and the existing one (Uold) exceeds some threshold value (δ >0),

$$(\text{Unew} - \text{Uold}) > \delta,$$

Where Unew is the utility function for different goods and services including a new commodity such as Internet banking, for money transactions.

Consumers maximize their utility within a subset for money transactions:

$$U_i = f(X_i, t_i; R), \qquad (1)$$

Where X_i is a vector of input for different goods for technology i, t_i is a vector of inputs of time for technology i, and R is a proxy variable for taste for new and old technologies. An adoption function is created by substituting the utility function above;

$$\left[f(X_{new,} t_{new}; R) + C_{new}\right] - \left[f(X_{old}, t_{old}; R) + C_{old}\right] > \delta, \qquad (2)$$

Where i = new denotes the new technology, and i = old denotes the old technology, C_i is the effect of unobserved factors. The above equation can be rewritten as follow:

$$-\eta < U^*, \qquad (3)$$

Where $U^* = f(X_{new}, t_{new}; R) - f(X_{old}, t_{old}; R) - \delta,$ and $\eta = C_{new} - C_{old}$.

Following the methodology of Kim et al. (2005), our study investigates which consumers are more likely to adopt Internet banking, so the dependent variable is a binary choice, whether consumers adopt Internet banking or not. The model has a probability function as follow:

$$Y = f(Z, \beta) + \varepsilon, \quad \text{Y = 0, 1} \qquad (4)$$

Where:

Pr (Internet banking is adopted, or Y=1) = Pr ($-\eta < U^*$)

Pr (Internet banking is not adopted, or Y=0) = 1 – Pr ($-\eta < U^*$)

Where Z includes Internet Experience, Internet Skills, Perceived Security, Web Design/Features, Reliability, Marketing Exposure, Internet Prestige, and Demographic factors such as Age, Education, Income, and Occupation.

If the random term is assumed to have a logistic distribution, then the above questions represent the standard binary logit model. However, if it is assumed that the random term is normally distributed, then the model becomes the binary probit model (Maddala, 1993; Ben-Akiva and Lerman, 1985; Greene, 1990). The logit model will be used in this analysis because of convenience, as the differences between the two models are slight (Maddala, 1993).

Consumers' adoption of Internet banking is hypothesized to be affected by the following factors and can be implicitly written under the general form:

CAIB = f (IE, IS, PS, WD/F, RE, ME, IP, GEN, AGE, MAR, OCC, EDU, INC, ε) (3.1)

Where,

CAIB = 1 if consumer adopts Internet banking; 0 otherwise
IE (+) = Internet Experience
IS (-) = Internet Skills
PS (+) = Perceived Security
WD/F (+) = Web Design/Features
RE (+) = Reliability
ME (+) = Marketing Exposure
IP (+) = Internet Prestige

Segmentation Characteristics:
GEN (+/-) = Gender; 1 if respondent is a male; 0 otherwise

AGE (+/-) = Dummy variables for age group
Age group 1; 1 if respondent age is between 18 to 35 years old; 0 otherwise
Age group 2; 1 if respondent age is between 36 to 45 years old; 0 otherwise
Age group 3; 1 if respondent age is between 46 to 61 years old or above 61 years old; 0 otherwise

MAR (+/-) = Dummy variables for marital status
Marital status 1; 1 if respondent is single/never married; 0 otherwise
Marital status 2; 1 if respondent is married; 0 otherwise
Marital status 3; 1 if respondent is divorced/separated or widowed; 0 otherwise

EDU (+/-) = Dummy variables for educational qualifications
Educational qualification 1; 1 if respondent completed primary school or lower, Middle school or High school; 0 otherwise
Educational qualification 2; 1 if respondent completed two year college or bachelor degree; 0 otherwise
Educational qualification 3; 1 if respondent completed postgraduate degree or higher degree; 0 otherwise

OCC (+/-) = Dummy variable for occupational status
Occupational status 1; 1 if respondent is a professional or trade person; 0 otherwise
Occupational status 2; 1 if respondent is a student; 0 otherwise
Occupational status 3; 1 if respondent is a civil servant; 0 otherwise
Occupational status 4; 1 if respondent is laborer or famer; 0 otherwise
Occupational status 5; 1 if respondent is sales/service; 0 otherwise
Occupational status 6; 1 if respondent is unemployed, home maker, retired or others; 0 otherwise

INC (+/-) = Dummy variables for annual income levels
Income level 1; 1 if respondent annual income level is 400RMB - 1500RMB; 0 otherwise
Income level 2; 1 if respondent annual income level is 1501RMB - 5000RMB; 0 otherwise
Income level 3; 1 if respondent annual income level is above 5001RMB or others; 0 otherwise

ε = Error term

4.10.2 Sensitivity Analysis

In Studenmund (2001) and Greene (1993)'s work, the authors examine the empirical estimation of the Logit model via Maximum Likelihood Estimates (MLE), which assumes large sample properties of consistency, efficiency, normality of parameter estimates, and validity of the t-test significance. Given these properties, the logit model avoids the major problem associated with Ordinary Least Square (OLS) estimation of the standard linear probability model (Judge, Hill, Griffiths, Lutkepohl, and Lee, 1982; Hair, Anderson, Tatham, and Black, 1998). The MLE coefficient estimates from the logit analysis have no direct interpretation with respect to the probabilities of the dependent variable (Y=1) other than indicating a direction of influence of probability.

Maddala (1991) and Liao (1994) recommend calculating the changes in probabilities to indicate the magnitude of the marginal effect. This refers to the partial derivatives of non-linear probability function evaluated at each variable's sample mean (Liao, 1994; Pindyck and Rubinfeld, 1991). As a result, in order to identify the most and the least important variables influencing bank customers' decision making between Internet banking and non-Internet banking, the marginal effect for each of the estimated coefficients in the empirical model are calculated. The marginal effect reveals the marginal change in the dependent variable given a unit change in a selected independent variable, holding other variables constant (Liao, 1994). The marginal effect indicates the level of importance for the estimated coefficients in the empirical model.

4.11 Additional Statistical Analysis

Two of the most common univariate procedures for assessing group means are one-way ANOVA (Analysis of Variance) and the t-test which compares a dependent variable across two groups (Hair et al., 1998).

4.11.1 One-way ANOVA Application

Assuming that the data is from a normally distributed population, the variances in each experimental condition are fairly similar, outliers, and high multicollinearity should not be present. Furthermore, the independent and dependent variables should be measured on an interval scale (Hair et al., 1998). Univariate ANOVA compared the statistical difference between three or more means (Hair, Bush, and Ortinau, 2000). Univariate ANOVA could be implied as two independent estimates of the variance for the respondents within the group (MS_w) and another, which represents the different groups, attributes to the treatment effects (MS_B) (Hair et al., 1998):

1. MS_w: Mean square within groups (5)
2. MS_B: Mean square between groups

Given that the null hypothesis of no group differences is not rejected, MS_w and MS_B represent the independent estimates of the population variance. Therefore, the ratio of MS_B to MS_w measures of how much variance is attributable to different treatments versus the variance expected from random sampling, and is calculated as follows (Hair et al., 1998):

$$Fstatistic = \frac{MS_B}{MS_W} \quad (6)$$

The F-tests of one-way ANOVA assess the null hypothesis of equal means between groups. However, the results of the F-tests do not indicate where the significant difference lie if there are more than two groups. Hair et al. (1998) suggest five common post hoc procedures to test each combination of groups to identify the significant differences among groups: the Scheff test, the Turkey's honestly significant difference (HSD) test, the Turkey's extension of the Fisher least significant (LSD) approach, the Duncan's multiple-range test, and the Newman-Kules test. From the five post hoc test procedures, the most conservative method with respect to a Type I error is Scheff test (Hair et al., 1998).

In this study, the F-test will be used to test the demographic impact of customers' perceptual differences of Internet banking adoption choice (i.e. age, married status, education level, occupation, and income).

4.11.2 The Parametric Two Independent Sample T-test Application

With similar assumptions as the one-way ANOVA (Field, 2000), the parametric two independent sample t-tests provides a rational way to determine if the difference between the two sample means occurs by chance (Hair et al., 2000; Hair et al., 1998).

The test of differences between two group means can be conceptualized as the difference between the means divided by the variability of random means. Thus, the t statistics is a ratio of the difference between the two independent samples, the hypotheses take the following form.

$$H_o : \mu_1 = \mu_2 \quad (7)$$

$$H_1 : \mu_1 \neq \mu_2$$

The formula for calculating the t-statistic value is:

$$\text{T statistics} = \frac{\mu_1 - \mu_2}{SE_{\mu 1 \mu 2}} \quad (8)$$

Where:

$\mu_1 =$ Mean of group 1

$\mu_2 =$ Mean of group 2

$SE\mu_1\mu_2$ = Standard error of the difference in group means

In this study, the results of t-test can demonstrate whether or not the mean scores of two groups, such as male and female, are significantly different with respect to Internet banking adoption choice.

Chapter 5 Results and Discussion

5.1 Introduction

Chapter Four described the theoretical and empirical framework used in this research. Details of the additional statistical analysis, research design, questionnaire development and format, and construct measurement were also discussed. This chapter presents the frequencies and statistics generated using SPSS (Version 15.0) and LIMDEP from the sample responses to the survey. Results of the hypothesis tests relating to each objective, the empirical results, and the findings are also discussed.

5.2 Descriptive Statistics

The data in Table 5.1 shows the descriptive statistics for the respondents who adopt Internet banking and those who did not adopt Internet banking. A total of 500 local respondents were interviewed with the structured questionnaires, among which 60 questionnaires were incomplete, or were not suitable for use in this study. This resulted in a total of 460 completed questionnaires generating 92% percent usable response rate. From the total of 460 useable questionnaires, 60.2% (277) of the respondents are Internet banking users, while 39.8% (183) of respondents consider themselves as non-Internet banking users. The demographic characteristics of all respondents are established as follow. The sample respondents are comprised of 49.6% (228) males and 50.4% (232) females, and 53% (244) of the respondents are married at the time of survey. The dominant age groups are between 26 - 35 years old (41.5%) (191) and 18 - 25 years old (27%) (124). Majority of the respondents have either a bachelor degree (43.5%) or a postgraduate degree (24.1%). In term of

occupations, 26.5% of respondents worked as Civil Servant and 22.8% in Sales/Services. The major annual income level of the respondents is between RMB 1501 - RMB 2000 (18%) and RMB 2001 - RMB 3000 (26.3%) (see Table 5.1).

When separating the respondents based on the adoption and non-adoption decision of Internet banking services, the 183 respondents who did not adopt Internet banking have different demographic characteristics when compared to the 277 respondents who adopted Internet banking in regards to age, marital status, occupation, education, and income.

The Young Age Group is more likely to adopt Internet banking than the Old Age Group (see Table 5.1). Most of the Internet banking users are single (50.2%) compared to the non-Internet banking users who are married (63.4%). The main educational qualifications of the non-Internet banking users are bachelors degree, 73 respondents (39.9%) and two years of college, 66 respondents (36.1%) compared to the Internet banking users who have a postgraduate degree, 90 respondents (32.5%) and bachelor degree, 127 respondents (45.8%). Furthermore, the majority (21.9%) of non-Internet banking users' annual incomes are lower than the Internet banking users (30.7%). The respondents who adopted Internet banking are mostly Civil Servants (33.2%), and the non-Internet banking users are mostly in Sales/Services (29.0%). The time of overall computer use for non-Internet banking users is slightly lower than the Internet banking users (see Table 5.1).

5.3 Assessment of the Data

The data is tested to verify whether the statistical assumptions of factor analysis and logistic regression analysis have been met. The data is compromised of two groups of

respondents: adopters and non-adopters. In order to apply the factor analysis, the data from respondents who adopted Internet banking are reverse coded and combined with the non-adopting respondents' data. Some questions were not answered by the respondents. They were treated as missing variables and coded as -9 in our data entry.

5.3.1 Statistical Assumption for Factor Analysis

In order to avoid the observed correlations between variables being diminished, the statistical assumptions of normality, homoscedasticity, and linearity for factor analysis need to be fulfiled. According to Hair et al., (2006), a data matrix that has sufficient correlation can be used to justify the use of factor analysis. A series of statistical assumptions to test the data matrix include Examination of the Correlation Matrix, Inspection of the Anti-image Correlation Matrix, Barlett's Test of Sphericity, and Kaiser-Meyer-Olkin measure of sampling adequacy.

5.3.1.1 Examination of the Correlation Matrix

The correlation matrix (see Table 5.2) reveals that most of correlations are above 0.30 as recommended by Hair et al. (2006). The correlation matrix indicates that the data shared common factors and is therefore appropriate for factor analysis.

5.3.1.2 Inspection of the Anti-Image Correlation Matrix

The visual inspection of the off-diagonal elements of the anti-image correlation matrix (see Table 5.3) shows that the majority of these values are close to zero (absolute value less than 0.01). This result indicates that the data set is appropriate for factor analysis (Hair et al., 2006).

5.3.1.3 Bartlett's Test of Sphericity

Bartlett's test of Sphericity tests whether the correlation matrix comes from a population of variables that are independent. The test value (see Table5.4) is high (18934.632) and the level of significance is 0.000. Therefore, the null hypothesis is rejected and the data set is deemed appropriate for factor analysis (Stewart, 1981).

5.3.1.4 The Kaiser-Meyer-Olkin measure of sampling adequacy

The Kaiser-Meyer-Olkin Index measures values from 0 to 1. In this research, the test result (see Table 5.4) is 0.947, which can be defined as "meritorious" according to Kaiser and Rice (1974), and therefore the data set is appropriate for factor analysis.

5.3.2 Factor Analysis Results

The results of the statistical assumptions tests indicated that the data set is appropriate for factor analysis. Therefore, principle component factor analysis is conducted on all of the items that are consistent with the information derived from the literature review and the focus group interviews. The results are interpreted using the following criteria.

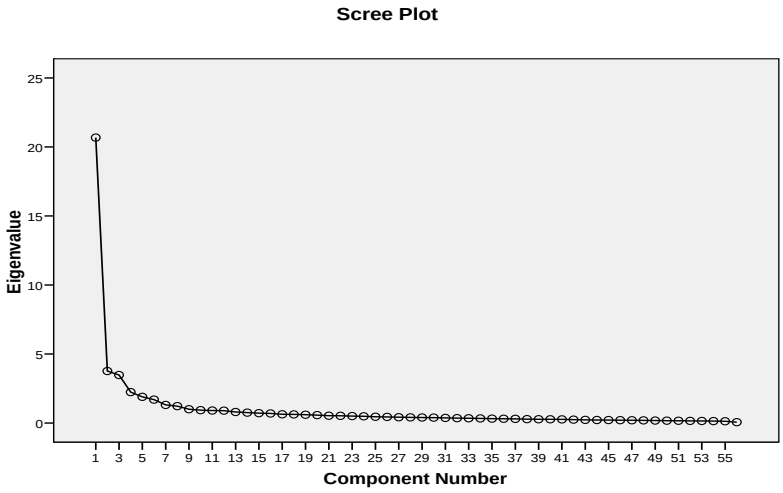
5.3.2.1 The Latent Roots Criterion

Results of the latent root criterion reveal that eight factors can be extracted from the 56 variables submitted for factor analysis (see Table 5.5). These eight factors explained 64.8% of the variation in the data.

5.3.2.2. The Scree Test

Figure 5.1 shows that by laying a straight edge across the bottom portion of the roots, there are eight factors before the curve becomes approximately a straight line. Therefore, the results indicate that the extraction of eight factors is appropriate for this analysis.

Figure 5.1



5.3.2.3 Rotation Results

Factor rotation simplifies the rows and columns of the factor matrix and maximizes a variable's loading on a single factor in order to facilitate interpretation (Hair et al., 2006). An orthogonal rotation (VARIMAX) and an oblique rotation (OBLIMIN) are normally used to explain the computed factor matrix. In this research, both techniques showed similar factor loading on most of the variables (see Table 5.6 and 5.7). Finally, a VARIMAX rotation is adopted as it produced a clearer structure in terms of the content validity of the factors.

5.3.2.4 Factor Interpretation

According to Hair et al. (2006), for a sample of 350 respondents, factor loadings of 0.30 and above are significant. However, the authors also suggest that values greater than ± 0.50 are generally necessary for practical significance. Therefore, 0.50 is used as a cut-off point as ± 0.50 resulted in an improved factor structure and assisted in formulating the factor rotation. The results (see Table 5.6 and5.7) show that all of the factors had significant loadings above $\pm .50$ using the VARIMAX method. However, one variable (C42) is excluded from the factor structure because it does not load on any of the eight identified factors. In addition, (C17) loaded on isolated factor and subsequently dropped from the analysis (see Table 5.6). The remaining 55 variables are sorted into 7 factors (see Table 5.6), namely: (1) Internet Experience; (2) Security; (3) Web Design/Features; (4) Internet Skill; (5) Marketing Exposure; (6) Reliability; (7) Internet Prestige (see Table 5.6).

5.3.3 Assessment of Summated Scales

Before summation of the items, the cross-tabulation, the chi-square test, content validity, dimensionality, and reliability of the measurement scales are assessed.

5.3.3.1 Cross-Tabulation

The relationship between the respondents regrouped based on demographic characteristics are shown in Tables 5.8 to 5.14.

5.3.3.2 Content Validity

Content validity subjectively assesses the correspondence between the individual items and the concept (Hair et al., 2006). Inspection of all the variables demonstrated

that the selection of scale items are adequate and included theoretical and practical considerations. The VARIMAX technique shows all variables loaded on the eight sub-dimensions as proposed in the research model except item C42. Therefore, it is concluded that the items exhibited adequate content validity.

5.3.3.3 Dimensionality

None of the variables cross loaded on any other factors (see Table 5.6). While C42 did not load on any of the factors, C17 loaded on only one factor and is dropped from the analysis.

5.3.3.4 Reliability of the Construct Measurement

The items used to measure each construct are tested for reliability by using a Cronbach's Alpha value of 0.6 as the cut-off point. A value of 0.6 or more generally indicates satisfactory reliability in exploratory studies (Hair, Bush, and Ortinau, 2000). The results of the reliability tests for the construct measures are shown in Table 5.15.

5.3.4 Statistical Assumptions for Logistic Regression Models

There are numerous statistical tests to determine if the assumption of logistic regression analysis is satisfied.

5.3.4.1 Outliers

Outliers are defined by Hair et al. (2006) as observations that are substantially different from the other observations. The outliers in this study are also identified and removed from the analysis to reduce the effects of their influence on the regression analysis (Hair et al., 2006).

5.3.4.2 Multicollinearity

The Pearson Correlation Matrix is used to inspect the correlations between the independent variables. The result (see Table 5.16) showed that the correlations are all below 0.80, indicating no multicollinearity problems existed in the regression models used in this research (Hair et al., 2006).

5.3.4.3 Data Level

Due to the dichotomous nature of the dependent variable (adopt or non-adopt), binary logistic regression is used in this research (Garson, 2008). All of the demographic items which are categorical characteristics are coded as dummy variables in the analysis.

5.4 Results Pertaining to Research Objective One (Hypothesis 1 – 7)

Research Objective 1: Identify which factors affect bank consumers' adoption of Internet banking in Zhengzhou, China.

Logistic regression analysis was used to answer Research Objective One. Empirical estimates of the logit model via maximum likelihood assure large sample properties of consistency, efficiency, normality of the parameter estimates and validity of the t-test of significance. The discrete dependent variable, CAIB, measures whether an individual is an Internet banking or non-Internet banking user. The dependent variable is based on the question asked in the mail survey: "Do you use Internet banking?" Age is divided into 3 groups (18 to 35 years old; 36 to 45 years old; 46 to 61 years old); education is divided into 3 groups (completed high school; completed two year college or bachelor degree; completed postgraduate degree or higher degree;); occupation is divided into 6 groups (students; civil servants; laborers or farmers; sales or services; and unemployed, home maker, or retired); and income is divided into 3 groups (RMB400 - RMB1500; RMB1501 - RMB5000; above RMB5001). These are dummy variables and one dummy variable is dropped from each group to avoid the dummy trap problem in the model. Furthermore, the dummy variables student and unemployed, home maker, and retired are excluded in the logit analysis because students in Zhengzhou generally do not have a bank account. Similarly, the unemployed, home maker, and retired respondents do not have a steady income and their bank balances tend to be at the lower end.

The estimated results are presented in Table 5.17. In general, the model fitted the data quite well. The chi-square test strongly rejected the hypothesis of no explanatory power. Furthermore, Gender, Young Age, High Education, Internet Experience,

Perceived Security, Reliability and Internet Prestige are statistically significant and the signs on the parameter estimates support the a priori hypotheses outlined earlier.

Table 5.17 Logistic Regression Results (Influencing Factors and Demographic Characteristics on Internet Banking Adoption)

Number of Observations:	460			
Log likelihood function:	-119.3344			
Restricted log likelihood:	-309.1754			
Chi-Squared Statistics:	379.6820			
Degrees of Freedom:	17			
Prob [ChiSqd > value]:	0.000000			
McFadden R2:	0.61402			
	Coefficients	Std Error	t-statistics	Marginal Effects
Gender	0.7160637745	0.35709685	2.005**	0.1414291544
Young Age	0.9070813174	0.49866729	1.819*	0.1914233984
Old Age	-0.2115913984	0.66001607	-0.321	-0.4360919739E-01
Single	-0.1136321366	0.48096340	-0.236	-0.2264071811E-01
Low Education	-1.245248663	0.84509055	-1.474	-0.2898196396
High Education	0.7271919824	0.43049489	1.689*	0.1343120085
Professional and Trade Person	0.1009897718	0.56564175	0.179	0.1971723746E-01
Civil Servant	0.5857493764	0.49767863	1.177	0.1087138588
Sales/Services	-0.6117237353E-01	0.45449369	-0.135	-0.1223971795E-01
Low Income	-0.1899536068	0.44314179	-0.429	-0.3852292751E-01
High Income	0.5722066424	0.57774049	0.990	0.1026621981
Internet Experience	0.3839379923	0.22750637	1.688*	0.7625024132E-01
Perceived Security	0.4569218489	0.18728217	2.440**	0.9074486490E-01
Web Design/Feature	0.4573831905E-01	0.24047463	0.190	0.9083648754E-02
Internet Skill	-0.1271462727	0.16494643	-0.771	-0.2525130144E-01
Marketing Exposure	0.7859727440E-01	0.14835789	0.530	0.1560945064E-01
Reliability	0.3794171521	0.19268935	1.969**	0.7535240063E-01
Internet Prestige	-1.244203667	0.13628908	-9.129**	-0.2470993539

Prediction Classification

Actual	0	1	Total
0	153	30	183
1	19	258	277
Total	172	288	460

Note: ** denote statistically significant at the 0.05 level of significance
* statistically significant at the 0.10 level of significance

The coefficient value for Perceived Security, Reliability, and Internet Prestige are all significant at the 0.05 level of significance. The coefficient value for Internet Experience is significant at the 0.1 level of significance. Table 5.17 shows the Perceived Security factor positively influences Chinese consumers' choice of Internet

banking, where bank consumers are more concerned about security issue than other factors. Thus, Hypothesis 1 is supported. The Internet Experience positively influences Chinese consumers' choice of Internet banking, indicating support for Hypotheses 2. The consumers who are more experienced at using the Internet are more likely to adopt Internet banking than those consumers who have less exposure to the Internet. The results for Web Design/Feature and Marketing Exposure have the correct signs as hypothesized, but are insignificant. Thus, Hypotheses 3 and 5 are not supported. Internet Skill is insignificant but has the correct sign. Bank customers with low Internet skill may fear using Internet banking due to the higher rates of online fraud and fake websites. In addition, the Low Internet Skill customers may consider Internet banking difficult to use as they consider computers difficult to operate. The Reliability factor positively influences Chinese consumers' choice of Internet banking, indicating support for Hypothesis 6. However, the logistic regression results show Internet Prestige is negative and statistically significant at the 0.05 level of significance, because Internet banking is considered luxury consumption in Zhengzhou. The typical Internet banking customers are aged between 25 and 35 years old, have medium to high income with a medium to high cultural level, and Internet banking gives these customers more prestige among their peers (Price Waterhouse Coopers, 2000; Flynn and Goldsmith, 1993). Thus Hypothesis 7 is supported.

Consequently, Hypotheses 1 to 7 are summarized in the following table.

Table 5.18: Hypotheses 1 to 7 Test Results

Hypotheses	Supported	Not Supported
H1: Perceived Security is positively related to adoption of Internet banking.	√	
H2: Internet Experience is positively related to adoption of Internet banking.	√	
H3: Marketing Exposure is positively related to adoption of Internet banking.		√
H4: Internet Skill is negatively related to adoption of Internet banking.		√
H5: Web Design/Features are positively related to adoption of Internet banking.		√
H6: Reliability is positively related to adoption of Internet banking.	√	
H7: Internet Prestige is positively related to adoption of Internet banking.	√*	

Note: *The logistic regression result shows negatively significant

5.5 Results Pertaining to Research Objective Two

Research Objective 2: Determine the most important factors that are associated with the adoption of Internet banking in Zhengzhou, China.

Table 5.19: Marginal Effect of Customers' Adoption of Internet banking

Factors	Marginal Effect	Ranking
Young Age Group	0.19142340	1
Gender	0.14142915	2
High Education Group	0.13431201	3
Perceived Security	0.09074486	4
Internet Experience	0.07625024	5
Reliability	0.07535240	6
Internet Prestige	-0.2470994	7

The marginal effect results show that Young Age Group (18 to 35 years old) has the maximum impact on bank customers' decision in Internet banking adoption choice. For example, the results show that a unit increase in the Young Age Group factor results in a 19.1% probability that a consumer will adopt Internet banking. Gender has the second highest impact on consumers' adoption of Internet banking. A unit increase in the Gender factor results in a 14.1% probability that a consumer will adopt Internet banking. High Education Group (Postgraduate degree and above) is the third most likely impact on consumers' adoption of Internet banking. The marginal change in the probability for High Education Group indicates that a unit increase in High Education Group results in a 13.4% probability that the customers will adopt Internet banking. The fourth most important factor influencing customers to adopt Internet banking is Perceived Security. For example, the results show that a unit increase in Perceived Security results in a 9.1% probability that a customer will adopt Internet banking. Internet Experience is the fifth most likely impact on consumers' adoption of Internet banking. A unit increase in the Internet Experience factor results in a 7.6% probability that a consumer will adopt Internet banking. Reliability and Internet Prestige are the sixth and seventh factors influencing bank customers' decision in Internet banking adoption. For example, a unit increase in Reliability results in a 7.5% probability that customers will adopt Internet banking. A unit decrease in Internet Prestige results in a 24.7% probability that a customer will not adopt Internet banking.

5.6 Results Pertaining to Research Objective Three (Hypotheses 8 – 14)

Research Objective 3: Determine the impact that the demographic characteristics have on Internet banking adoption in Zhengzhou, China.

Research Objective Three examines the impact of the demographic characteristics on Internet banking adoption in Zhengzhou, China. Logistic regression analysis is used to test Hypotheses 8 to 14 to answer Research Objective Three. The summary test results for Hypotheses 8 to 13 are shown in Table 5.20 (based on the logistic regression results shown in Table 5.17 in Section 5.3).

Table 5.20: Hypotheses 8 through 13 Test Results

Hypotheses	Supported	Not Supported
H8: Younger age (under the age of 35) is positively related to adoption of Internet banking	√	
H9: Marital status is positively related to adoption of Internet banking.		√
H10: Male consumers are more likely to adopt Internet banking than female consumers.	√	
H11: Occupation has a positive impact on the adoption of Internet banking.		√
H12: Education qualifications have a positive impact on the adoption of Internet banking.	√	
H13: Income levels are positively related to adoption of Internet banking.		√

The coefficient of Gender is significant at the 0.05 level of significance and shows a positive relationship between Gender and adoption of Internet banking. Young Age and High Education are also significant at the 0.10 level of significance. Young Age has a positive coefficient for the age group between 18 and 35, which suggest that Young age has a positive impact on the probability of Internet banking adoption, and that young customers are most likely to adopt Internet banking. The logit results also show that the consumers' educational qualification has a positive impact on the probability of choosing Internet banking. For consumers who have a high education level, such as bachelor degree or postgraduate degree, their likelihood of using Internet banking is higher when compared with low or middle education levels.

Therefore, Hypotheses 8, 10, and 12 are supported. The coefficient for the Married Group, Occupation, and High Income Group have correct signs as hypothesized but their impact on adoption of Internet banking are not statistically significant. Thus, Hypotheses 9, 11, and 13 are rejected.

The results in Tables 5.21 to 5.27 show that consumers with different Gender, Age, Marital Status, Education Level, Occupation, and Income Level attribute different amounts of importance to the choice factors when they consider to adopt or not to adopt Internet banking. The choice factors are perceived differently and include Internet Experience, Perceived Security, Reliability, Internet Prestige, Web Design/Feature, Internet Skill, and Marketing Exposure.

In order to answer the Research Objective Three, ANOVA and T-test are employed to test Hypotheses 14, whether there are any different perceptions about adopting Internet banking between the different demographic groups. For example, the results in Table 5.21 shows there is significant perceptual importance difference (since $p = 0.031 > \alpha = 0.05$) between male and female. (i.e. male mean = 4.416 is significantly different to female mean = 4.405) between Web Design/Feature and Marketing Exposure in Internet banking adoption. Consumers perceived importance of Internet Experience, Perceived Security, Reliability, Internet Prestige, Web Design/Feature, Internet Skill, and Marketing Exposure are significantly different among the demographic groups of age, marital status, education level, occupation, and income level (see Tables 5.22 to 5.27).

5.6.1 Age Relating to Internet Banking Adoption

In terms of age, the results (see Table 5.28) indicate that Internet Experience, Perceived Security, Internet Skill and Internet Prestige are more important for the Young and Middle Age Groups than Old Age Groups in the adoption of Internet banking. However, the Old Age Group is also concerned with the Internet banking features such as Web Design/Feature and Reliability compared to the Young and Middle Age Group.

5.6.2 Marital Status Relating to Internet Banking Adoption

There is a perceived importance difference between Single/Never married and Married group (Divorced /widowed didn't show any difference to other groups) in Perceived Security, Internet Skill and Internet Prestige in Internet banking adoption (see Table 5.29). The results show that Single / Never married perceived Perceived Security and Internet skills more important than Married group) while Married group perceived Internet Prestige more important than Single/Married Group when considering Internet banking adoption.

5.6.3 Education Relating to Internet Banking Adoption

Higher education group perceived Internet Experience to be more important than Middle and Low education groups (High μ > middle μ > low μ) when considering adopting of Internet banking. High education group perceived Security, Web Design/Feature, Internet Skill, Marketing Exposure and Internet Prestige to be more important than Middle education group (High μ > middle μ) when considering adopting of Internet banking (see Table 5.24). Similarly Low and Middle education groups perceived Internet Prestige to be more important than High education group

(Middle μ & low μ > high μ) when considering Internet banking adoption. However, Low & Middle education groups do not posit any perceptual difference in terms of importance. Similarly, the results in Table 5.30 show in terms of education, Internet Experience, Perceived Security, Web Design/Feature, Internet Skill, Marketing Exposure and Internet Prestige are more important for the Higher Education Group than the Low and Middle Education Groups in the adoption of Internet banking. However, the Low and Middle Education Groups are more concerned with Internet Experience in Internet banking adoption.

5.6.4 Occupation Relating to Internet Banking Adoption

Labor and Famer groups perceived Perceived Security, Marketing Exposure, Web Design/Feature and Internet Skill to be less important compared with other groups when considering adopting Internet banking. Also, Farmer and Labor group perceived Internet Prestige to be more important compared to other occupational groups when considering adopting Internet banking. Internet Skill is perceived to be more important to the Civil Servant Group compared with other groups when considering adopting Internet banking (see Table 5.25). Similar findings are also reported in Table 5.31.

5.6.5 Income Relating to Internet Banking Adoption

Internet Experience, Perceived Security, Web Design/Feature, and Reliability are perceived more important by Middle Income Group than Low Income group. In contrast, Internet Prestige is perceived more important by Low Income Group than Middle Income group (see Table 5.26). Similar findings are also reported in Table 5.32.

Chapter 6 Conclusions and Implications

6.1 Introduction

This chapter summarises the research findings presented in Chapter Five and discuses their theoretical and managerial implications. The research limitations and directions for future research are also discussed.

The three Research Objectives in this study were addressed by testing 14 hypotheses. Hypotheses 1 through 7 relate to Research Objective One. Hypotheses 8 through 14 relate to Research Objective Three. Research Objective Two was satisfied by examining the most important factors influencing customers' adoption of Internet banking.

6.2 Conclusions Pertaining to Research Objective One

Research Objective 1: Identify which factors affect bank consumers' adoption of Internet banking in Zhengzhou, China.

Research Objective One was satisfied as the factors affecting bank consumers' adoption of Internet banking in China were identified. The results of the logistic regression analysis show that there is a significant positive relationship between consumers' adoption of Internet banking and the influencing factors: Perceived Security, Internet Experience, and Reliability. Therefore, Hypotheses 1, 2, and 6 are supported. This result supports the findings of Kaynak and Harcar (2005), Altintas and Gürsakal (2007), Agarwal et al. (2000), and Polatoglu and Ekin (2001). For example, in their study Kaynak and Harcar (2005) observe that security is the most important reason for not using Internet banking by the sample respondents. In addition, the individuals' prior experiences and their past interaction with a computer can form

their self-efficacy and their confidence to use an advanced technology (Agarwal et al., 2000). Kaynak and Harcar (2005), Altintas and Gürsakal (2007), Agarwal et al. (2000), and Polatoglu and Ekin (2001) find that Perceived Security, Internet Experience, Reliability, and Internet Prestige are important factors that influence customers to adopt Internet banking. These factors are similar to the factors that influence the adoption of Internet banking that have been identified in this study.

In general, Internet banking users include young, affluent, and highly educated (Polatoglu and Ekin, 2001). Prestige Internet banking can also be related to social status of individual. People who achieve a high hierarchical social status often display the following qualities: confidence, intelligence, affluent, and highly educated groups. However, the study results show a significant but negative relationship between Internet Prestige and consumers' adoption of Internet banking in Zhengzhou.

The population in Zhengzhou is smaller compared to big cities such as Beijing, Shanghai, and Guangzhou. In addition, Zhengzhou has a larger proportion of low and middle income people and the city is considered a Tier 2 – Tier 3 city. Thus, most people can not afford to subscribe for Internet service. Internet banking is also considered a "luxury" consumption especially for low income people. In addition, Internet service is not widely available in Zhengzhou compare to Beijing and Shanghai. Most of the rural areas do not have access to Internet too. Therefore, the low hierarchical social status of the people, such as having lower levels of education, social status, self esteem and lower incomes means low probability in Internet banking adoption in Zhengzhou.

The logistic regression results show that Marketing Exposure, Internet Skill, and Web Design/Feature are not significant. However, these three factors do have the correct sign. Thus Hypotheses 3, 4, and 5 are not supported. The positive relationship between Marketing Exposure and Web Design/Feature means that exposure to effective marketing and a user-friendly web design, increase the likelihood that a customer will adopt Internet banking. There is also a significant negative relationship between customers' decision to adopt Internet banking and Internet Skill. The lower the Internet Skill, the less likely it is that a customer will adopt Internet banking. These results support the findings of Al-Sukkar and Hasan (2004), Lichtenstein and Williamson (2006), Polatoglu and Ekin (2001), and Liu and Arnett (2000). For example, Al-Sukkar and Hasan (2004) and Lichtenstein and Williamson (2006) report that in the Middle East and Australia, many Internet non-users did not know, or did not consider Internet banking as they had not seen the technology advertised. Polatoglu and Ekin (2001) also show that the consumers' knowledge and skills about the Internet and Internet banking are important to the adoption of Internet banking. If the knowledge and skills about the internet and Internet banking are low, the adoption rate will be lower. The more knowledge and skills a consumer possesses about the Internet and Internet banking, the easier it is for that consumer to utilize Internet banking (Polatogu and Ekin, 2001). Al-Sukkar and Hasan (2004), Lichtenstein and Williamson (2006), Polatoglu and Ekin (2001), and Liu and Arnett (2000) also find that the Marketing Exposure, Web Design/Feature, and Internet Skills are important factors that influence customers to adopt Internet banking services.

6.3 Conclusions Pertaining to Research Objective Two

Research Objective 2: Determine the most important factors that are associated with the adoption of Internet banking in Zhengzhou, China.

The marginal-effect results showed that Young Age Group (18 to 35 years old) has the maximum impact on Internet banking adoption. Males (Gender Group) have the second highest probability of adopting Internet banking. High Education Group (Postgraduate degree and above) was the third most important factors influencing customers' decision to adopt Internet banking. Perceived Security is the fourth most important factor influencing the consumers' decision to adopt Internet banking. Internet Experience and Reliability are the fifth ad sixth most important factors influencing customers' decision to adopt Internet banking, followed by the Internet Prestige factor (see Table 5.19).

6.4 Conclusions Pertaining to Research Objective Three

Research Objective 3: Determine the impact that the demographic characteristics have on Internet banking in Zhengzhou, China.

This objective was satisfied. However, only Age, Gender, and Education Qualification have impacts on customers' decision to adopt Internet banking. The logistic regression results reveal that the Younger Age, Male, and Higher Education Groups positively influence consumers' decision to adopt Internet banking. Therefore, Hypotheses 8, 10, and 12 were supported. This result is consistent with Sakkthivel (2006) and Stavins's (2001) findings. For example, Sakkthivel (2006) shows that the profile of an Internet user tends to be young, male, well educated, and earn an above-average income. Stavins (2001) identifies that consumers with more years of education are more likely to use Internet banking. Similarly, in terms of the marginal effects, Gender is the most important demographic variable influencing the

consumers' adoption of Internet banking followed by the High Education Group, and Young Age Groups (see Table 5.19).

However, there are no clear relationships between the Marital Status, Occupation, and High Income Groups and their adoption of Internet banking. Thus, Hypotheses 9, 11 and 13 were not supported. These results are consistent with some of the research findings, such as Al-Somali, Gholami and Clegg's (2008), and Gan, Clemes, Limsombunchai, & Weng (2006). In Al-Somali, Gholami and Clegg's (2008) study, there is no statistically significant relationship between the income level and the adoption of Internet banking. In Gan et al.'s (2006) study, the results show that high income respondents are less likely to use electronic banking as they may prefer to deal with the bank staff directly when they do complex transactions and handle large sums of money. Further, the authors note that Marital Status does not have an impact on a consumer's decision to use electronic banking.

6.5 Theoretical Implications

This research makes a number of contributions to the banking industry. Firstly, this research contributes to the limited empirical studies currently available on consumers' adoption of Internet technology, especially in the Chinese Internet banking context. This study provides valuable knowledge about consumers' adoption of Internet banking in Zhengzhou by empirically identifying the factors that influence Chinese customers to adopt Internet banking.

Secondly, this research used consumers' decision-making process as a theoretical base to examine consumers' adoption of Internet banking. The results of this research

suggest that the consumer decision-making process framework can be used to examine consumers' choice of technology-enabled services.

Thirdly, this research confirms that some of the factors influencing customers' adoption of Internet banking identified in previous research in other countries are also applicable to the Chinese Internet banking market: Internet Experience, Reliability, Internet Skill, Internet Prestige, Web Design/Feature, and Marketing Exposure.

6.6 Managerial Implications

Perceived Security

This study reveals that Perceived Security is an important factor influencing customers' adoption of Internet banking. Several researchers indicate that Perceived Security plays an important role when bank customers decide to adopt Internet banking services (Kaynak and Harcar, 2005; Liao and Wong, 2007; Altintas and Gürsakal, 2007; and Laforet and Li, 2005).

Security is an important factor in regards to Internet banking service quality issues. Liao and Cheung (2002) and Sathye (1999) show that the more secure the customer perceive Internet banking to be, the more likely it is that customer will use Internet banking. Laforet and Li's (2005) study shows a significant security difference between customers using online banking and those who do not, and the authors' emphasize that hackers and fraud negatively influence non-users in adopting Internet banking.

In China, Perceived Security is the most important factor influencing consumers' adoption of Internet banking (Hua, 2009). Chinese bank customers, in general, do not trust the security of the transaction service or the validity of the bank's printed receipts. Customers are concerned that the list of their personal identification numbers (PIN) codes may be lost and end-up in the wrong hands. To overcome such risk issues, bank management should take steps to manage and minimize perceived security risks. Banks should implement new security policies, improve the internal communication coordination, evaluate and upgrade their services according to customers' expectations, and develop service recovery programmes. Banks should also increase their ability to control and manage the various risks inherent in Internet transaction activities. Banks can use encryption, firewall, intrusion detection, and other related security devices to properly safeguard the Internet banking security systems. Banks can also increase customer authentication such as PIN, and audit trials for transactions.

Internet Experience

This research reveals that Internet Experience also has strong influence on customers' decision to adopt Internet banking. This result is consistent with a number of researchers that regard Internet Experience as the main factor that affects consumers' adoption of Internet banking (Igbaria and Iivari, 1995; Howcroft and Durking, 2000; Jiang, Hsu, Klein, and Lin, 2000). Thus, familiarity with the Internet environment encourages acceptance of Internet banking by individuals who have used the World Wide Web for a long period. Those individuals who have conducted Internet transactions in the past, as well as customers who have prior experience with mobile banking, are also more likely to adopt Internet banking services. Another reason for a

low Internet Experience level maybe due to the limited access to the Internet among some customers who have low incomes, can not afford to buy a personal computer (to counter the effects of low Internet Experience), and to register for Internet services. For example, Gerrard and Cunningham (2003) find that consumers who are non-adopters of Internet banking will be disadvantaged by their lower computation proficiency and computer skills. Therefore, the government should provide some free basic computer training projects which can educate people about the computer and the Internet. The government should also improve support to the public access to the Internet. As people have more accessibility and knowledge about the Internet, they will use the services that the Internet can provide, such as online shopping, and paying bills. These incentives should increase the number of probability that bank customers adopt Internet banking services. Karjaluoto et al.'s (2002) study reveal that customers with a good knowledge of computers are generally more likely to use Internet banking.

Reliability

The results of this study confirm that Reliability is another important factor influencing consumers to adopt Internet banking, supporting the findings of Sathye (1999), Polatoglu and Ekin (2001), and Liao and Cheung (2002). In order to increase the adoption rate of Internet banking, banks should provide websites with proper functioning to customers and the websites should be available all the time. In addition, it is also important for customers that the bank's website should never freeze after a customer enters all relevant financial information. Otherwise, entering the same information twice may annoy and confuse the customers. Banks should provide a back-up data recovery system for their Internet banking services in case of a power

failure. Problem free links, accurate links, and pages download times are also major concerns of Internet banking customers (Khan, 2007). More specifically, banks should focus attention on money transactions conducted using Internet banking and ensure customers that the transaction process is safe and reliable. Regularly providing accurate information and updating records are important to bank customers. An easy to understand website test is also beneficial to customers. Furthermore, bank management should make an effort to diffuse the Internet banking technology by developing confidence in ease of use, credibility, reliability, access, and speed among the customers.

Bank management also need to improve their ability to understand and listen to the customers rather than expect the customers to use the technology themselves without any technical support. To be effective, banks should also minimize risk and reduce uncertainty. The banks can then move forward to increase the perceived reliability of Internet banking services.

Internet Prestige

Prestige Internet banking includes factors such as status and high standing among peers (Lichtenstein and Williamson, 2006; Sathy, 1999; Mols, 1998). It reflects perceived popularity among peers. In Zhengzhou, Internet banking users are less compared to more developed cities such as Beijing and Shanghai. Furthermore, Internet banking in Zhengzhou has not been widely promoted nor easily accessible to bank customers. There is also a large proportion of middle and low income group in Zhengzhou with smaller banking transactions. Those who use Internet banking are affluent, have more savings and wealth. Thus, this makes Internet banking costly for

the middle and low income group but many would like to have Internet banking just to show higher social status among their peers. Although they seem to benefit in the short term in the immediate social context of the peer group, the longer-term outcomes associated with their status and Internet banking behavior are not yet known.

Demographic Characteristics

The empirical results reveal that the High Education Group is most likely to adopt Internet banking and these results are consistent with the findings of Al-Ashban and Burney (2001) and Stavins (2001). The High Education Group consumers adopt Internet banking because generally they have a higher knowledge of new technology information and skills compared to consumers in the Low Education Group. According to Stavins (2001), consumers with more years of education are more likely to use Internet banking. Banks should provide free introductory computer courses about Internet banking to bank customers. As the education level increases, people who have attended the courses should have more knowledge and skills and therefore perceived Internet banking as more user-friendly. Therefore, the adoption rate of Internet banking should also increase. Consumers with a higher education level may also have more knowledge about the Security issue in Internet banking. Because these customers normally read more articles, business papers, magazines, and attend conference, they may have an improved understanding about the Security issue in Internet banking.

Gender also influences the preference for Internet banking. The empirical results in this study show that males are more likely to use Internet banking than females. This

result is similar to findings in Katz and Aspden (1997) and Karjaluoto's (2002a) studies. Katz and Aspden's (1997) findings show that males are more likely to use Internet banking than females. Similarly, Karjaluoto (2002 a) finds that Internet banking users are dominated by males. Most Internet banking users in this study were civil servants. It is likely that males in such occupations frequently use technologies such as computers and the Internet in the workplace, giving them access to the required hardware and possibly fostering a preference for online interaction with providers. For female customers, they have greater fear and less interest in new technologies such as the Internet when compared to their male customers (Morahan-Martin, 2000). In Shergill and Bing's (2005) study, the authors indicate that female customers treat the privacy protection and ethical standards more seriously than the male customers in Internet banking performance evaluation. Thus, privacy protection such as the security issue is more important to the female customers when they consider adopting Internet banking. Thus, banks have to pay more attention to promoting good security protection and to building a good reputation image to the female customers to enhance their perceived trust.

The Young Age Group is most likely to adopt Internet banking. This study results are consistent with Barnett's (1998) findings, where younger consumers are more comfortable in using Internet banking compared to older customers who are more likely to be non-Internet bankers. Younger consumers adopt Internet banking due to greater convenience, lower prices, and/or time savings. In order to encourage more young consumers to adopt Internet banking, banks can offer more price differential for different age, occupation, and income groups. For example, banks can offer cheaper monthly fees to students who use Internet banking services than business

people. The Young Age Group may not have much disposable income, so cheaper transaction costs in Internet banking will encourage them to use Internet banking.

For the Old Age Group customers, some studies have suggested that older consumers may be discouraged from using electronic banking due to limited visibility and mobility (Councils on the Ageing, 2002). As such, it is important that the financial institutions address these concerns and demonstrate the advantages of Internet banking to older customers.

6.7 Limitations and Avenues for Future Research

Although this study provides contributions from both a theoretical and practical perspective, there are a few limitations.

First, this research was conducted in Zhengzhou, Henan Province of China. Peoples' beliefs and attitudes can be significantly different across different regions and countries. Furthermore, the sample respondents are limited to customers in the mall who are willing to be surveyed, and the non-probability sample does not allow for assessment of sampling error. Therefore, a probability sample in a different geographic area may reveal differences in consumers' attitudes towards the adoption of Internet banking from those identified in this study. This information may also have different managerial implications from those drawn in this study.

Secondly, this study identified seven factors that may influence consumers' adoption of Internet banking. However, there may be some additional factors that can impact on customers' adoption of Internet banking but are not examined in this study.

Additional empirical research is required to identify and examine other factors that can impact on customers' adoption of Internet banking services, such as type of Internet connection used, perceived ease of use, self-efficiency, culture, and trust.

Thirdly, this study focuses on the private bank customers in China. Further studies on the adoption of Internet banking services in China can be extended to corporate customers. Comparison can then be made between private customers and corporate customers in terms of the factors influencing their adoption decisions, the criteria for selecting an Internet banking service, and the types of products and services perceived to be useful in Internet banking.

Fourthly, future research can address the impact of perceived popularity in social status on Internet banking. Of particular concern is the low income group who is victimized by the costs associated with Internet banking especially in less affluent city such as Zhengzhou.

6.8 Conclusion

The objective of this study is to analyze the factors affecting bank customers' decisions to adopt Internet banking through an exploratory investigation. This study identifies some factors that are more influential than others in Internet banking adoption in the Chinese banking market in Zhengzhou city. These factors include Young Age Group, Gender, and High Education Group. Rogers (1983) identified that the characteristics of earlier adopters of innovation as having higher levels of education, social status, self esteem and higher incomes. Therefore, bank manager should have different strategies in targeting different group of customers in terms of

gender, age and education in order to promote and encourage Internet banking adoption.

Security is also important factor when customers consider adopting Internet Banking. In a case like China, bank managements should build a strong security system to attract customers and develop their trust. An understanding of the factors identified in this study allows bank managers to direct efforts and resources in the most effective and efficient way to increase bank business in the long run and encourage their bank customers' to adopt Internet banking.

Internet Experience is identified as the most important factor influencing consumers to adopt Internet banking. Therefore, the government and banks have to develop methods that can increase bank customers' knowledge and skills about computers and Internet banking.

Banks who try to attract new customers will also benefit from an understanding of why customers do not adopt Internet banking. Bank managers can make use of such information to develop appropriate strategies to attract new customers to use Internet banking services.

In general, if the bank management has greater knowledge about the factors affecting their customers' adoption of Internet banking, then they have greater ability to develop appropriate strategies and hence increase the Internet banking adoption rate.

The Chinese banking system is characterized by a large proportion of state-ownership and low capitalization. In China, the old banking culture is cash-carry banking. People withdraw cash from one bank and deposit in another bank. This is very common in China for people to transfer money. This could be one reason why there are still a large proportion of people that are non-Internet banking users.

However, as the technology integrates into the Chinese banking system, mobile banking and online banking take precedent over the traditional cash banking culture. Chinese banks especially the major commercial banks have their own Internet banking websites to allow their customers to execute their bank transactions via the Internet. Many Chinese banks have invested in the Internet technology because it is a trend in banking transactions and services and the customers can conduct their banking needs with little time required and it is cost saving for them (Samphanwattanachai, 2007).

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Table 5.1: Descriptive Statistic of Demographic Characteristics

Variables	N		Total Respondents		Internet Banking users		Non-Internet Banking users	
			Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent
Gender	Valid	Male	228	49.6	150	54.2	78	42.6
		Female	232	50.4	127	45.8	105	57.4
		Total	460	100.0	277	100.0	183	100.0
Age	Valid	18-25	124	27	88	31.8	36	19.7
		26-35	191	41.5	127	45.8	64	35.0
		36-45	102	22.2	47	17.0	55	30.1
		46-60	39	8.5	15	5.4	24	13.1
		61+	4	.9	0	0	4	2.2
		Total	460	100.0	277	100.0	183	100.0
Marital Status	Valid	Single/Never married	200	43.5	139	50.2	61	33.3
		Married	244	53.0	128	46.2	116	63.4
		Divorced/Separated	12	2.6	8	2.9	4	2.2
		Widowed	4	.9	2	.7	2	1.1
		Total	460	100.0	277	100.0	183	100.0
Education	Valid	Primary School or lower	3	.7	0	0	3	1.6
		Middle School	4	.9	1	.4	3	1.6
		High School	17	3.7	5	1.8	12	6.6
		Two years College	98	21.3	32	11.6	66	36.1
		Bachelors Degree	200	43.5	127	45.8	73	39.9
		Postgraduate Degree	111	24.1	90	32.5	21	11.5
		Other	27	5.9	22	7.9	5	2.7
		Total	460	100.0	277	100.0	183	100.0
Occupation	Valid	Professional	27	5.9	15	5.4	12	6.6
		Trade Person	35	7.6	24	8.7	11	6.0
		Student	56	12.2	37	13.4	19	10.4
		Civil Servant	122	26.5	92	33.2	30	16.4
		Laborer	44	9.6	20	7.2	24	13.1
		Farmer	3	.7	0	0	3	1.6
		Unemployed	12	2.6	6	2.2	6	3.3
		Sales/service	105	22.8	52	18.8	53	29.0
		Home Maker	2	.4	0	0	2	1.1
		Retired	11	2.4	2	.7	9	4.9
		Other	43	9.3	29	10.5	14	7.7
		Total	460	100.0	277	100.0	183	100.0
Income	Valid	$400	7	1.5	6	2.2	1	.5
		$401-$1,000	32	7.0	12	4.3	20	10.9
		$1,001-$1,500	75	16.3	35	12.6	40	21.9

		$1501-$2,000	83	18.0	45	16.2	38	20.8
		$2,001-$3,000	121	26.3	85	30.7	36	19.7
		$3.001-$5,000	76	16.5	55	19.9	21	11.5
		Above $5,001	21	4.6	14	5.1	7	3.8
		Other	45	9.8	25	9.0	20	10.9
		Total	460	100.0	277	100.0	183	100.0
Time to use computer	Valid	Less than 1 year	19	4.1	3	1.1	16	8.7
		1-5 years	150	32.6	68	24.5	82	44.8
		6-10 years	207	45.0	150	54.2	57	31.1
		11-15 years	58	12.6	48	17.3	10	5.5
		16-20 years	7	1.5	2	.7	5	2.7
		More than 20 years	1	.2	1	.4	0	0
		Don’t have a computer at home	18	3.9	5	1.8	13	7.1
		Total	460	100.0	277	100.0	183	100.0

Table 5.2 The Correlation Matrix for Internet banking adoption

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28
C1	1.00	0.92	-0.07	-0.16	-0.24	-0.13	-0.15	-0.08	-0.28	-0.30	-0.26	-0.30	-0.30	-0.19	-0.23	-0.42	-0.26	-0.28	-0.07	-0.24	-0.29	-0.28	-0.36	-0.22	-0.24	-0.37	-0.19	-0.29
C2	0.92	1.00	-0.05	-0.15	-0.23	-0.11	-0.14	-0.08	-0.30	-0.30	-0.26	-0.33	-0.32	-0.15	-0.23	-0.39	-0.25	-0.29	-0.05	-0.25	-0.28	-0.24	-0.34	-0.25	-0.21	-0.37	-0.20	-0.27
C3	-0.07	-0.05	1.00	0.59	0.57	0.41	0.33	0.37	0.30	0.28	0.26	0.26	0.32	0.28	0.27	0.31	0.29	0.23	0.18	0.30	0.35	0.29	0.28	0.26	0.41	0.43	0.34	0.38
C4	-0.16	-0.15	0.59	1.00	0.61	0.49	0.35	0.32	0.34	0.36	0.38	0.35	0.37	0.30	0.35	0.31	0.34	0.31	0.21	0.39	0.36	0.28	0.37	0.32	0.41	0.49	0.36	0.44
C5	-0.24	-0.23	0.57	0.61	1.00	0.61	0.40	0.43	0.47	0.47	0.49	0.50	0.51	0.39	0.45	0.49	0.37	0.40	0.30	0.49	0.53	0.47	0.47	0.45	0.47	0.55	0.39	0.48
C6	-0.13	-0.11	0.41	0.49	0.61	1.00	0.38	0.40	0.50	0.53	0.52	0.49	0.51	0.46	0.53	0.40	0.29	0.45	0.40	0.48	0.47	0.45	0.46	0.48	0.41	0.48	0.27	0.40
C7	-0.15	-0.14	0.33	0.35	0.40	0.38	1.00	0.54	0.35	0.36	0.38	0.37	0.33	0.26	0.30	0.43	0.38	0.31	0.27	0.35	0.31	0.30	0.36	0.35	0.31	0.37	0.34	0.32
C8	-0.08	-0.08	0.37	0.32	0.43	0.40	0.54	1.00	0.43	0.43	0.46	0.38	0.37	0.34	0.39	0.41	0.32	0.35	0.35	0.38	0.42	0.38	0.32	0.32	0.34	0.37	0.29	0.33
C9	-0.28	-0.30	0.30	0.34	0.47	0.50	0.35	0.43	1.00	0.80	0.62	0.61	0.66	0.52	0.61	0.47	0.29	0.53	0.38	0.55	0.59	0.53	0.55	0.55	0.30	0.41	0.26	0.39
C10	-0.30	-0.30	0.28	0.36	0.47	0.53	0.36	0.43	0.80	1.00	0.69	0.62	0.68	0.59	0.64	0.48	0.28	0.59	0.45	0.55	0.55	0.54	0.56	0.58	0.37	0.46	0.29	0.46
C11	-0.26	-0.26	0.26	0.38	0.49	0.52	0.38	0.46	0.62	0.69	1.00	0.67	0.62	0.51	0.60	0.46	0.34	0.54	0.42	0.53	0.55	0.49	0.51	0.52	0.38	0.43	0.34	0.44
C12	-0.30	-0.33	0.26	0.35	0.50	0.49	0.37	0.38	0.61	0.62	0.67	1.00	0.76	0.55	0.63	0.48	0.29	0.54	0.38	0.56	0.56	0.54	0.54	0.53	0.33	0.38	0.28	0.44
C13	-0.30	-0.32	0.32	0.37	0.51	0.51	0.33	0.37	0.66	0.68	0.62	0.76	1.00	0.63	0.67	0.49	0.32	0.55	0.40	0.56	0.58	0.53	0.59	0.59	0.42	0.46	0.31	0.46
C14	-0.19	-0.15	0.28	0.30	0.39	0.46	0.26	0.34	0.52	0.59	0.51	0.55	0.63	1.00	0.68	0.40	0.20	0.57	0.43	0.51	0.55	0.54	0.50	0.52	0.31	0.31	0.27	0.37
C15	-0.23	-0.23	0.27	0.35	0.45	0.53	0.30	0.39	0.61	0.64	0.60	0.63	0.67	0.68	1.00	0.49	0.31	0.62	0.44	0.57	0.58	0.59	0.59	0.62	0.36	0.41	0.36	0.43
C16	-0.42	-0.39	0.31	0.31	0.49	0.40	0.43	0.41	0.47	0.48	0.46	0.48	0.49	0.40	0.49	1.00	0.58	0.49	0.37	0.49	0.51	0.50	0.48	0.51	0.47	0.52	0.38	0.47
C17	-0.26	-0.25	0.29	0.34	0.37	0.29	0.38	0.32	0.29	0.28	0.34	0.29	0.32	0.20	0.31	0.58	1.00	0.30	0.26	0.34	0.36	0.28	0.37	0.35	0.38	0.44	0.35	0.34
C18	-0.28	-0.29	0.23	0.31	0.40	0.45	0.31	0.35	0.53	0.59	0.54	0.54	0.55	0.57	0.62	0.49	0.30	1.00	0.59	0.62	0.60	0.55	0.54	0.55	0.36	0.42	0.32	0.42
C19	-0.07	-0.05	0.18	0.21	0.30	0.40	0.27	0.35	0.38	0.45	0.42	0.38	0.40	0.43	0.44	0.37	0.26	0.59	1.00	0.59	0.50	0.44	0.47	0.52	0.28	0.28	0.31	0.30
C20	-0.24	-0.25	0.30	0.39	0.49	0.48	0.35	0.38	0.55	0.55	0.53	0.56	0.56	0.51	0.57	0.49	0.34	0.62	0.59	1.00	0.63	0.60	0.61	0.59	0.40	0.47	0.36	0.45
C21	-0.29	-0.28	0.35	0.36	0.53	0.47	0.31	0.42	0.59	0.55	0.55	0.56	0.58	0.55	0.58	0.51	0.36	0.60	0.50	0.63	1.00	0.67	0.60	0.61	0.40	0.41	0.39	0.48
C22	-0.28	-0.24	0.29	0.28	0.47	0.45	0.30	0.38	0.53	0.54	0.49	0.54	0.53	0.54	0.59	0.50	0.28	0.55	0.44	0.60	0.67	1.00	0.59	0.58	0.35	0.34	0.32	0.39
C23	-0.36	-0.34	0.28	0.37	0.47	0.46	0.36	0.32	0.55	0.56	0.51	0.54	0.59	0.50	0.59	0.48	0.37	0.54	0.47	0.61	0.60	0.59	1.00	0.66	0.41	0.54	0.34	0.48
C24	-0.22	-0.25	0.26	0.32	0.45	0.48	0.35	0.32	0.55	0.58	0.52	0.53	0.59	0.52	0.62	0.51	0.35	0.55	0.52	0.59	0.61	0.58	0.66	1.00	0.47	0.44	0.45	0.49
C25	-0.24	-0.21	0.41	0.41	0.47	0.41	0.31	0.34	0.30	0.37	0.38	0.33	0.42	0.31	0.36	0.47	0.38	0.36	0.28	0.40	0.40	0.35	0.41	0.47	1.00	0.70	0.61	0.62
C26	-0.37	-0.37	0.43	0.49	0.55	0.48	0.37	0.37	0.41	0.46	0.43	0.38	0.46	0.31	0.41	0.52	0.44	0.42	0.28	0.47	0.41	0.34	0.54	0.44	0.70	1.00	0.56	0.66
C27	-0.19	-0.20	0.34	0.36	0.39	0.27	0.34	0.29	0.26	0.29	0.34	0.28	0.31	0.27	0.36	0.38	0.35	0.32	0.31	0.36	0.39	0.32	0.34	0.45	0.61	0.56	1.00	0.64
C28	-0.29	-0.27	0.38	0.44	0.48	0.40	0.32	0.33	0.39	0.46	0.44	0.44	0.46	0.37	0.43	0.47	0.34	0.42	0.30	0.45	0.48	0.39	0.48	0.49	0.62	0.66	0.64	1.00

Correlation Matrix (Continued)

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28
C29	-0.33	-0.33	0.34	0.40	0.43	0.39	0.27	0.35	0.40	0.46	0.42	0.46	0.46	0.37	0.44	0.45	0.33	0.42	0.28	0.43	0.46	0.42	0.50	0.44	0.53	0.61	0.53	0.72
C30	-0.16	-0.15	0.34	0.35	0.47	0.35	0.29	0.36	0.30	0.38	0.38	0.37	0.38	0.32	0.36	0.38	0.28	0.35	0.26	0.39	0.38	0.38	0.37	0.43	0.53	0.52	0.46	0.56
C31	-0.32	-0.30	0.40	0.44	0.48	0.44	0.31	0.38	0.34	0.42	0.43	0.46	0.45	0.42	0.42	0.43	0.27	0.44	0.30	0.50	0.47	0.42	0.45	0.46	0.53	0.59	0.51	0.62
C32	-0.22	-0.20	0.33	0.40	0.39	0.30	0.24	0.28	0.20	0.25	0.32	0.30	0.33	0.26	0.28	0.38	0.34	0.29	0.19	0.34	0.28	0.26	0.31	0.28	0.46	0.51	0.46	0.51
C33	-0.33	-0.31	0.32	0.38	0.41	0.33	0.31	0.31	0.28	0.33	0.35	0.36	0.34	0.25	0.30	0.45	0.37	0.41	0.29	0.40	0.37	0.31	0.41	0.35	0.51	0.55	0.46	0.54
C34	-0.18	-0.16	0.32	0.38	0.35	0.25	0.30	0.24	0.15	0.16	0.29	0.23	0.27	0.21	0.23	0.32	0.43	0.24	0.20	0.32	0.29	0.20	0.31	0.30	0.53	0.48	0.50	0.44
C35	-0.08	-0.07	0.31	0.31	0.29	0.22	0.27	0.20	0.05	0.10	0.15	0.13	0.19	0.14	0.15	0.26	0.35	0.19	0.14	0.21	0.18	0.14	0.20	0.13	0.48	0.44	0.40	0.40
C36	-0.10	-0.09	0.15	0.16	0.30	0.30	0.27	0.28	0.37	0.35	0.32	0.31	0.31	0.29	0.35	0.40	0.26	0.30	0.15	0.33	0.28	0.39	0.33	0.34	0.21	0.33	0.16	0.28
C37	-0.12	-0.16	0.18	0.19	0.34	0.30	0.28	0.31	0.39	0.39	0.32	0.32	0.33	0.26	0.34	0.40	0.30	0.35	0.20	0.36	0.31	0.37	0.39	0.40	0.28	0.40	0.22	0.34
C38	-0.03	-0.05	0.06	0.15	0.24	0.21	0.17	0.20	0.25	0.27	0.26	0.21	0.19	0.19	0.24	0.24	0.23	0.31	0.26	0.25	0.25	0.26	0.24	0.32	0.25	0.27	0.25	0.24
C39	-0.11	-0.10	0.16	0.21	0.30	0.31	0.19	0.32	0.41	0.37	0.32	0.37	0.33	0.38	0.39	0.28	0.14	0.37	0.25	0.33	0.35	0.43	0.31	0.37	0.18	0.23	0.13	0.25
C40	-0.12	-0.14	0.13	0.17	0.27	0.27	0.17	0.27	0.34	0.36	0.35	0.37	0.32	0.39	0.43	0.30	0.16	0.38	0.22	0.27	0.32	0.44	0.35	0.37	0.20	0.25	0.19	0.28
C41	-0.09	-0.08	0.10	0.17	0.29	0.31	0.19	0.24	0.38	0.37	0.35	0.36	0.32	0.30	0.37	0.21	0.07	0.27	0.22	0.35	0.31	0.38	0.36	0.36	0.15	0.21	0.11	0.26
C42	-0.28	-0.29	0.32	0.31	0.46	0.35	0.31	0.33	0.43	0.43	0.43	0.46	0.45	0.37	0.48	0.53	0.35	0.41	0.26	0.41	0.47	0.46	0.47	0.49	0.42	0.46	0.41	0.52
C43	-0.12	-0.12	0.25	0.30	0.39	0.36	0.27	0.32	0.46	0.47	0.44	0.39	0.45	0.45	0.45	0.38	0.28	0.42	0.40	0.47	0.47	0.37	0.46	0.46	0.37	0.39	0.26	0.39
C44	-0.16	-0.15	0.29	0.34	0.41	0.37	0.31	0.28	0.47	0.44	0.46	0.44	0.45	0.37	0.44	0.40	0.27	0.40	0.36	0.54	0.46	0.42	0.48	0.46	0.37	0.43	0.31	0.43
C45	-0.16	-0.13	0.26	0.33	0.39	0.30	0.28	0.22	0.32	0.36	0.42	0.41	0.41	0.32	0.32	0.37	0.29	0.32	0.27	0.40	0.39	0.32	0.39	0.40	0.39	0.40	0.34	0.47
C46	-0.08	-0.09	0.23	0.26	0.31	0.33	0.18	0.24	0.33	0.37	0.39	0.32	0.35	0.32	0.33	0.30	0.19	0.28	0.35	0.37	0.35	0.27	0.36	0.41	0.33	0.32	0.33	0.38
C47	-0.17	-0.19	0.28	0.37	0.42	0.48	0.26	0.27	0.45	0.48	0.50	0.45	0.52	0.46	0.48	0.40	0.27	0.49	0.42	0.56	0.45	0.35	0.48	0.46	0.34	0.41	0.30	0.39
C48	-0.19	-0.18	0.21	0.29	0.38	0.41	0.27	0.27	0.44	0.46	0.47	0.46	0.46	0.39	0.46	0.42	0.23	0.46	0.40	0.50	0.41	0.36	0.47	0.44	0.36	0.40	0.29	0.41
C49	-0.07	-0.07	0.18	0.20	0.30	0.35	0.21	0.22	0.41	0.43	0.34	0.39	0.43	0.32	0.42	0.27	0.16	0.40	0.37	0.43	0.37	0.34	0.43	0.42	0.29	0.31	0.26	0.38
C50	-0.06	-0.08	0.17	0.25	0.31	0.29	0.21	0.28	0.32	0.39	0.38	0.40	0.37	0.34	0.37	0.30	0.24	0.32	0.33	0.42	0.36	0.36	0.39	0.36	0.31	0.32	0.30	0.35
C51	-0.11	-0.08	0.17	0.20	0.29	0.30	0.18	0.21	0.35	0.38	0.35	0.32	0.32	0.30	0.34	0.30	0.18	0.32	0.28	0.35	0.35	0.36	0.36	0.37	0.30	0.30	0.29	0.34
C52	-0.12	-0.08	0.23	0.27	0.30	0.25	0.23	0.23	0.29	0.34	0.36	0.28	0.30	0.26	0.30	0.30	0.26	0.28	0.30	0.38	0.33	0.31	0.34	0.32	0.32	0.33	0.31	0.34
C53	-0.09	-0.11	0.18	0.20	0.24	0.18	0.22	0.19	0.18	0.22	0.18	0.18	0.15	0.12	0.13	0.26	0.26	0.14	0.17	0.24	0.26	0.20	0.24	0.23	0.32	0.24	0.36	0.25
C54	0.03	0.01	0.16	0.12	0.22	0.16	0.21	0.23	0.18	0.18	0.15	0.18	0.14	0.08	0.14	0.20	0.20	0.09	0.18	0.20	0.26	0.16	0.16	0.20	0.24	0.14	0.26	0.24
C55	-0.02	-0.01	0.19	0.13	0.21	0.21	0.21	0.24	0.26	0.23	0.28	0.28	0.25	0.22	0.26	0.22	0.18	0.24	0.24	0.27	0.24	0.22	0.29	0.25	0.27	0.21	0.25	0.22
C56	-0.01	-0.03	0.19	0.16	0.27	0.25	0.20	0.25	0.24	0.26	0.26	0.29	0.29	0.15	0.25	0.23	0.19	0.20	0.19	0.22	0.26	0.20	0.28	0.27	0.32	0.23	0.27	0.28

Correlation Matrix (Continued)

	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45	C46	C47	C48	C49	C50	C51	C52	C53	C54	C55	C56
C1	-0.33	-0.16	-0.32	-0.22	-0.33	-0.18	-0.08	-0.10	-0.12	-0.03	-0.11	-0.12	-0.09	-0.28	-0.12	-0.16	-0.16	-0.08	-0.17	-0.19	-0.07	-0.06	-0.11	-0.12	-0.09	0.03	-0.02	-0.01
C2	-0.33	-0.15	-0.30	-0.20	-0.31	-0.16	-0.07	-0.09	-0.16	-0.05	-0.10	-0.14	-0.08	-0.29	-0.12	-0.15	-0.13	-0.09	-0.19	-0.18	-0.07	-0.08	-0.08	-0.08	-0.11	0.01	-0.01	-0.03
C3	0.34	0.34	0.40	0.33	0.32	0.32	0.31	0.15	0.18	0.06	0.16	0.13	0.10	0.32	0.25	0.29	0.26	0.23	0.28	0.21	0.18	0.17	0.17	0.23	0.18	0.16	0.19	0.19
C4	0.40	0.35	0.44	0.40	0.38	0.38	0.31	0.16	0.19	0.15	0.21	0.17	0.17	0.31	0.30	0.34	0.33	0.26	0.37	0.29	0.20	0.25	0.20	0.27	0.20	0.12	0.13	0.16
C5	0.43	0.47	0.48	0.39	0.41	0.35	0.29	0.30	0.34	0.24	0.30	0.27	0.29	0.46	0.39	0.41	0.39	0.31	0.42	0.38	0.30	0.31	0.29	0.30	0.24	0.22	0.21	0.27
C6	0.39	0.35	0.44	0.30	0.33	0.25	0.22	0.30	0.30	0.21	0.31	0.27	0.31	0.35	0.36	0.37	0.30	0.33	0.48	0.41	0.35	0.29	0.30	0.25	0.18	0.16	0.21	0.25
C7	0.27	0.29	0.31	0.24	0.31	0.30	0.27	0.27	0.28	0.17	0.19	0.17	0.19	0.31	0.27	0.31	0.28	0.18	0.26	0.27	0.21	0.21	0.18	0.23	0.22	0.21	0.21	0.20
C8	0.35	0.36	0.38	0.28	0.31	0.24	0.20	0.28	0.31	0.20	0.32	0.27	0.24	0.33	0.32	0.28	0.22	0.24	0.27	0.27	0.22	0.28	0.21	0.23	0.19	0.23	0.24	0.25
C9	0.40	0.30	0.34	0.20	0.28	0.15	0.05	0.37	0.39	0.25	0.41	0.34	0.38	0.43	0.46	0.47	0.32	0.33	0.45	0.44	0.41	0.32	0.35	0.29	0.18	0.18	0.26	0.24
C10	0.46	0.38	0.42	0.25	0.33	0.16	0.10	0.35	0.39	0.27	0.37	0.36	0.37	0.43	0.47	0.44	0.36	0.37	0.48	0.46	0.43	0.39	0.38	0.34	0.22	0.18	0.23	0.26
C11	0.42	0.38	0.43	0.32	0.35	0.29	0.15	0.32	0.32	0.26	0.32	0.35	0.35	0.43	0.44	0.46	0.42	0.39	0.50	0.47	0.34	0.38	0.35	0.36	0.18	0.15	0.28	0.26
C12	0.46	0.37	0.46	0.30	0.36	0.23	0.13	0.31	0.32	0.21	0.37	0.37	0.36	0.46	0.39	0.44	0.41	0.32	0.45	0.46	0.39	0.40	0.32	0.28	0.18	0.18	0.28	0.29
C13	0.46	0.38	0.45	0.33	0.34	0.27	0.19	0.31	0.33	0.19	0.33	0.32	0.32	0.45	0.45	0.45	0.41	0.35	0.52	0.46	0.43	0.37	0.32	0.30	0.15	0.14	0.25	0.29
C14	0.37	0.32	0.42	0.26	0.25	0.21	0.14	0.29	0.26	0.19	0.38	0.39	0.30	0.37	0.45	0.37	0.32	0.32	0.46	0.39	0.32	0.34	0.30	0.26	0.12	0.08	0.22	0.15
C15	0.44	0.36	0.42	0.28	0.30	0.23	0.15	0.35	0.34	0.24	0.39	0.43	0.37	0.48	0.45	0.44	0.32	0.33	0.48	0.46	0.42	0.37	0.34	0.30	0.13	0.14	0.26	0.25
C16	0.45	0.38	0.43	0.38	0.45	0.32	0.26	0.40	0.40	0.24	0.28	0.30	0.21	0.53	0.38	0.40	0.37	0.30	0.40	0.42	0.27	0.30	0.30	0.30	0.26	0.20	0.22	0.23
C17	0.33	0.28	0.27	0.34	0.37	0.43	0.35	0.26	0.30	0.23	0.14	0.16	0.07	0.35	0.28	0.27	0.29	0.19	0.27	0.23	0.16	0.24	0.18	0.26	0.26	0.20	0.18	0.19
C18	0.42	0.35	0.44	0.29	0.41	0.24	0.19	0.30	0.35	0.31	0.37	0.38	0.27	0.41	0.42	0.40	0.32	0.28	0.49	0.46	0.40	0.32	0.32	0.28	0.14	0.09	0.24	0.20
C19	0.28	0.26	0.30	0.19	0.29	0.20	0.14	0.15	0.20	0.26	0.25	0.22	0.22	0.26	0.40	0.36	0.27	0.35	0.42	0.40	0.37	0.33	0.28	0.30	0.17	0.18	0.24	0.19
C20	0.43	0.39	0.50	0.34	0.40	0.32	0.21	0.33	0.36	0.25	0.33	0.27	0.35	0.41	0.47	0.54	0.40	0.37	0.56	0.50	0.43	0.42	0.35	0.38	0.24	0.20	0.27	0.22
C21	0.46	0.38	0.47	0.28	0.37	0.29	0.18	0.28	0.31	0.25	0.35	0.32	0.31	0.47	0.47	0.46	0.39	0.35	0.45	0.41	0.37	0.36	0.35	0.33	0.26	0.26	0.24	0.26
C22	0.42	0.38	0.42	0.26	0.31	0.20	0.14	0.39	0.37	0.26	0.43	0.44	0.38	0.46	0.37	0.42	0.32	0.27	0.35	0.36	0.34	0.36	0.36	0.31	0.20	0.16	0.22	0.20
C23	0.50	0.37	0.45	0.31	0.41	0.31	0.20	0.33	0.39	0.24	0.31	0.35	0.36	0.47	0.46	0.48	0.39	0.36	0.48	0.47	0.43	0.39	0.36	0.34	0.24	0.16	0.29	0.28
C24	0.44	0.43	0.46	0.28	0.35	0.30	0.13	0.34	0.40	0.32	0.37	0.37	0.36	0.49	0.46	0.46	0.40	0.41	0.46	0.44	0.42	0.36	0.37	0.32	0.23	0.20	0.25	0.27
C25	0.53	0.53	0.53	0.46	0.51	0.53	0.48	0.21	0.28	0.25	0.18	0.20	0.15	0.42	0.37	0.37	0.39	0.33	0.34	0.36	0.29	0.31	0.30	0.32	0.32	0.24	0.27	0.32
C26	0.61	0.52	0.59	0.51	0.55	0.48	0.44	0.33	0.40	0.27	0.23	0.25	0.21	0.46	0.39	0.43	0.40	0.32	0.41	0.40	0.31	0.32	0.30	0.33	0.24	0.14	0.21	0.23
C27	0.53	0.46	0.51	0.46	0.46	0.50	0.40	0.16	0.22	0.25	0.13	0.19	0.11	0.41	0.26	0.31	0.34	0.33	0.30	0.29	0.26	0.30	0.29	0.31	0.36	0.26	0.25	0.27
C28	0.72	0.56	0.62	0.51	0.54	0.44	0.40	0.28	0.34	0.24	0.25	0.28	0.26	0.52	0.39	0.43	0.47	0.38	0.39	0.41	0.38	0.35	0.34	0.34	0.25	0.24	0.22	0.28

Correlation Matrix (Continued)

	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45	C46	C47	C48	C49	C50	C51	C52	C53	C54	C55	C56
C29	1.00	0.55	0.69	0.51	0.57	0.42	0.34	0.26	0.36	0.22	0.29	0.34	0.26	0.52	0.43	0.44	0.44	0.33	0.37	0.39	0.36	0.37	0.38	0.33	0.32	0.29	0.24	0.30
C30	0.55	1.00	0.59	0.56	0.49	0.51	0.40	0.27	0.31	0.28	0.24	0.25	0.22	0.41	0.38	0.43	0.44	0.41	0.37	0.40	0.42	0.42	0.38	0.39	0.22	0.25	0.30	0.24
C31	0.69	0.59	1.00	0.61	0.58	0.47	0.38	0.27	0.33	0.16	0.30	0.30	0.31	0.48	0.44	0.46	0.41	0.32	0.42	0.40	0.32	0.38	0.35	0.34	0.26	0.23	0.27	0.30
C32	0.51	0.56	0.61	1.00	0.58	0.54	0.46	0.20	0.19	0.17	0.12	0.17	0.13	0.38	0.30	0.37	0.36	0.29	0.33	0.34	0.34	0.33	0.32	0.35	0.31	0.26	0.25	0.25
C33	0.57	0.49	0.58	0.58	1.00	0.65	0.51	0.23	0.29	0.24	0.19	0.16	0.15	0.40	0.34	0.40	0.35	0.25	0.34	0.31	0.25	0.30	0.33	0.31	0.33	0.24	0.25	0.29
C34	0.42	0.51	0.47	0.54	0.65	1.00	0.70	0.18	0.18	0.17	0.06	0.09	0.07	0.27	0.26	0.30	0.32	0.19	0.24	0.25	0.22	0.25	0.23	0.31	0.33	0.20	0.24	0.23
C35	0.34	0.40	0.38	0.46	0.51	0.70	1.00	0.23	0.22	0.17	0.05	0.08	0.05	0.23	0.24	0.26	0.29	0.17	0.24	0.25	0.21	0.18	0.16	0.25	0.29	0.22	0.21	0.23
C36	0.26	0.27	0.27	0.20	0.23	0.18	0.23	1.00	0.79	0.61	0.62	0.55	0.40	0.41	0.46	0.43	0.36	0.31	0.40	0.39	0.35	0.30	0.32	0.23	0.18	0.16	0.25	0.24
C37	0.36	0.31	0.33	0.19	0.29	0.18	0.22	0.79	1.00	0.66	0.65	0.59	0.41	0.43	0.48	0.47	0.39	0.36	0.45	0.42	0.38	0.37	0.34	0.30	0.23	0.20	0.25	0.26
C38	0.22	0.28	0.16	0.17	0.24	0.17	0.17	0.61	0.66	1.00	0.56	0.49	0.28	0.32	0.36	0.33	0.31	0.32	0.34	0.28	0.30	0.29	0.30	0.31	0.28	0.20	0.24	0.24
C39	0.29	0.24	0.30	0.12	0.19	0.06	0.05	0.62	0.65	0.56	1.00	0.72	0.51	0.39	0.45	0.41	0.29	0.28	0.38	0.36	0.33	0.30	0.32	0.19	0.10	0.11	0.19	0.21
C40	0.34	0.25	0.30	0.17	0.16	0.09	0.08	0.55	0.59	0.49	0.72	1.00	0.58	0.49	0.47	0.40	0.34	0.35	0.44	0.42	0.35	0.34	0.33	0.21	0.13	0.12	0.19	0.17
C41	0.26	0.22	0.31	0.13	0.15	0.07	0.05	0.40	0.41	0.28	0.51	0.58	1.00	0.47	0.43	0.45	0.32	0.34	0.43	0.37	0.41	0.34	0.32	0.21	0.12	0.13	0.18	0.18
C42	0.52	0.41	0.48	0.38	0.40	0.27	0.23	0.41	0.43	0.32	0.39	0.49	0.47	1.00	0.55	0.54	0.50	0.42	0.44	0.47	0.42	0.42	0.39	0.31	0.27	0.24	0.26	0.27
C43	0.43	0.38	0.44	0.30	0.34	0.26	0.24	0.46	0.48	0.36	0.45	0.47	0.43	0.55	1.00	0.69	0.53	0.49	0.56	0.52	0.42	0.42	0.46	0.39	0.22	0.24	0.27	0.29
C44	0.44	0.43	0.46	0.37	0.40	0.30	0.26	0.43	0.47	0.33	0.41	0.40	0.45	0.54	0.69	1.00	0.70	0.51	0.60	0.57	0.50	0.49	0.49	0.43	0.27	0.28	0.32	0.26
C45	0.44	0.44	0.41	0.36	0.35	0.32	0.29	0.36	0.39	0.31	0.29	0.34	0.32	0.50	0.53	0.70	1.00	0.58	0.58	0.54	0.49	0.51	0.48	0.45	0.33	0.31	0.35	0.32
C46	0.33	0.41	0.32	0.29	0.25	0.19	0.17	0.31	0.36	0.32	0.28	0.35	0.34	0.42	0.49	0.51	0.58	1.00	0.60	0.56	0.50	0.51	0.47	0.40	0.32	0.30	0.30	0.28
C47	0.37	0.37	0.42	0.33	0.34	0.24	0.24	0.40	0.45	0.34	0.38	0.44	0.43	0.44	0.56	0.60	0.58	0.60	1.00	0.70	0.55	0.53	0.49	0.45	0.31	0.26	0.38	0.33
C48	0.39	0.40	0.40	0.34	0.31	0.25	0.25	0.39	0.42	0.28	0.36	0.42	0.37	0.47	0.52	0.57	0.54	0.56	0.70	1.00	0.66	0.61	0.53	0.44	0.34	0.32	0.38	0.34
C49	0.36	0.42	0.32	0.34	0.25	0.22	0.21	0.35	0.38	0.30	0.33	0.35	0.41	0.42	0.42	0.50	0.49	0.50	0.55	0.66	1.00	0.62	0.53	0.44	0.34	0.37	0.36	0.39
C50	0.37	0.42	0.38	0.33	0.30	0.25	0.18	0.30	0.37	0.29	0.30	0.34	0.34	0.42	0.42	0.49	0.51	0.51	0.53	0.61	0.62	1.00	0.63	0.54	0.43	0.38	0.41	0.33
C51	0.38	0.38	0.35	0.32	0.33	0.23	0.16	0.32	0.34	0.30	0.32	0.33	0.32	0.39	0.46	0.49	0.48	0.47	0.49	0.53	0.53	0.63	1.00	0.60	0.39	0.32	0.40	0.34
C52	0.33	0.39	0.34	0.35	0.31	0.31	0.25	0.23	0.30	0.31	0.19	0.21	0.21	0.31	0.39	0.43	0.45	0.40	0.45	0.44	0.44	0.54	0.60	1.00	0.49	0.41	0.44	0.35
C53	0.32	0.22	0.26	0.31	0.33	0.33	0.29	0.18	0.23	0.28	0.10	0.13	0.12	0.27	0.22	0.27	0.33	0.32	0.31	0.34	0.34	0.43	0.39	0.49	1.00	0.69	0.47	0.52
C54	0.29	0.25	0.23	0.26	0.24	0.20	0.22	0.16	0.20	0.20	0.11	0.12	0.13	0.24	0.24	0.28	0.31	0.30	0.26	0.32	0.37	0.38	0.32	0.41	0.69	1.00	0.62	0.62
C55	0.24	0.30	0.27	0.25	0.25	0.24	0.21	0.25	0.25	0.24	0.19	0.19	0.18	0.26	0.27	0.32	0.35	0.30	0.38	0.38	0.36	0.41	0.40	0.44	0.47	0.62	1.00	0.71
C56	0.30	0.24	0.30	0.25	0.29	0.23	0.23	0.24	0.26	0.24	0.21	0.17	0.18	0.27	0.29	0.26	0.32	0.28	0.33	0.34	0.39	0.33	0.34	0.35	0.52	0.62	0.71	1.00

Table 5.3 Anti-image Correlation

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28
C1	0.75	-0.89	0.00	-0.01	0.03	0.02	0.03	-0.07	-0.05	0.06	0.02	-0.11	-0.03	0.11	-0.01	0.09	0.06	-0.05	0.02	-0.06	0.02	0.09	0.13	-0.17	0.12	-0.08	-0.06	0.04
C2	-0.89	0.74	-0.06	0.00	-0.01	-0.09	-0.02	0.01	0.06	-0.02	-0.02	0.14	0.05	-0.14	0.00	-0.01	-0.05	0.07	-0.10	0.05	0.01	-0.06	-0.08	0.15	-0.13	0.15	0.04	-0.06
C3	0.00	-0.06	0.94	-0.32	-0.23	0.00	-0.05	-0.10	-0.04	0.01	0.10	0.04	-0.04	-0.04	0.04	0.02	-0.04	0.04	0.01	0.03	-0.06	-0.06	0.06	0.04	-0.06	-0.04	0.00	-0.02
C4	-0.01	0.00	-0.32	0.95	-0.25	-0.11	-0.08	0.05	-0.01	-0.05	0.00	-0.01	0.04	0.05	-0.06	0.09	-0.06	-0.02	0.08	-0.05	0.03	0.05	-0.06	0.02	0.01	-0.03	0.01	-0.05
C5	0.03	-0.01	-0.23	-0.25	0.96	-0.27	0.03	-0.04	-0.02	0.04	-0.06	-0.06	-0.06	0.00	0.06	-0.10	0.03	0.02	0.03	-0.04	-0.08	-0.03	-0.03	0.04	0.04	-0.10	-0.06	0.04
C6	0.02	-0.09	0.00	-0.11	-0.27	0.96	-0.12	0.01	-0.04	-0.02	-0.07	-0.05	0.05	-0.01	-0.15	0.05	-0.01	0.04	-0.11	0.08	-0.02	-0.08	0.07	-0.08	-0.08	-0.14	0.19	0.01
C7	0.03	-0.02	-0.05	-0.08	0.03	-0.12	0.93	-0.37	0.03	-0.04	-0.02	-0.12	0.03	-0.01	0.12	-0.12	-0.07	-0.04	0.03	-0.01	0.13	0.02	-0.08	-0.08	0.09	0.00	-0.18	0.03
C8	-0.07	0.01	-0.10	0.05	-0.04	0.01	-0.37	0.95	-0.10	0.00	-0.14	0.06	0.01	0.00	-0.06	-0.05	-0.03	0.03	-0.13	0.01	-0.11	0.01	0.03	0.14	-0.06	-0.01	0.05	0.03
C9	-0.05	0.06	-0.04	-0.01	-0.02	-0.04	0.03	-0.10	0.95	-0.51	-0.02	-0.05	-0.12	0.05	-0.01	-0.03	-0.03	0.00	0.11	-0.03	-0.13	-0.02	-0.01	0.00	0.07	-0.04	-0.08	0.05
C10	0.06	-0.02	0.01	-0.05	0.04	-0.02	-0.04	0.00	-0.51	0.95	-0.27	0.04	-0.10	-0.15	-0.04	0.02	0.04	-0.08	-0.09	0.01	0.11	0.00	0.02	-0.06	0.00	-0.06	0.09	-0.09
C11	0.02	-0.02	0.10	0.00	-0.06	-0.07	-0.02	-0.14	-0.02	-0.27	0.97	-0.25	0.03	0.04	-0.07	0.05	-0.06	-0.04	-0.01	0.03	-0.06	-0.01	0.05	0.01	-0.04	0.01	-0.02	-0.01
C12	-0.11	0.14	0.04	-0.01	-0.06	-0.05	-0.12	0.06	-0.05	0.04	-0.25	0.96	-0.44	0.00	-0.09	-0.04	0.02	0.00	0.01	-0.10	-0.03	0.02	-0.03	0.07	0.03	0.14	0.05	-0.05
C13	-0.03	0.05	-0.04	0.04	-0.06	0.05	0.03	0.01	-0.12	-0.10	0.03	-0.44	0.96	-0.19	-0.08	0.02	-0.01	0.03	0.00	0.05	-0.02	-0.04	-0.02	-0.11	-0.09	-0.05	0.07	0.03
C14	0.11	-0.14	-0.04	0.05	0.00	-0.01	-0.01	0.00	0.05	-0.15	0.04	0.00	-0.19	0.96	-0.29	-0.04	0.11	-0.10	0.00	0.01	-0.07	-0.06	-0.03	-0.01	0.01	0.06	0.02	-0.02
C15	-0.01	0.00	0.04	-0.06	0.06	-0.15	0.12	-0.06	-0.01	-0.04	-0.07	-0.09	-0.08	-0.29	0.97	-0.07	-0.04	-0.13	0.09	-0.03	0.02	-0.05	-0.07	-0.12	0.05	0.00	-0.17	0.04
C16	0.09	-0.01	0.02	0.09	-0.10	0.05	-0.12	-0.05	-0.03	0.02	0.05	-0.04	0.02	-0.04	-0.07	0.96	-0.35	-0.05	-0.10	0.00	-0.03	-0.06	0.10	-0.07	-0.12	-0.04	0.08	-0.05
C17	0.06	-0.05	-0.04	-0.06	0.03	-0.01	-0.07	-0.03	-0.03	0.04	-0.06	0.02	-0.01	0.11	-0.04	-0.35	0.94	0.00	-0.03	-0.01	-0.04	0.04	-0.05	-0.05	0.05	-0.07	-0.02	0.05
C18	-0.05	0.07	0.04	-0.02	0.02	0.04	-0.04	0.03	0.00	-0.08	-0.04	0.00	0.03	-0.10	-0.13	-0.05	0.00	0.97	-0.25	-0.13	-0.16	-0.02	0.04	-0.02	0.00	-0.01	0.04	0.00
C19	0.02	-0.10	0.01	0.08	0.03	-0.11	0.03	-0.13	0.11	-0.09	-0.01	0.01	0.00	0.00	0.09	-0.10	-0.03	-0.25	0.94	-0.23	-0.01	-0.05	-0.09	-0.12	0.07	0.02	-0.14	0.05
C20	-0.06	0.05	0.03	-0.05	-0.04	0.08	-0.01	0.01	-0.03	0.01	0.03	-0.10	0.05	0.01	-0.03	0.00	-0.01	-0.13	-0.23	0.97	-0.10	-0.20	-0.06	-0.04	-0.02	-0.08	0.05	-0.02
C21	0.02	0.01	-0.06	0.03	-0.08	-0.02	0.13	-0.11	-0.13	0.11	-0.06	-0.03	-0.02	-0.07	0.02	-0.03	-0.04	-0.16	-0.01	-0.10	0.97	-0.28	-0.11	-0.06	0.05	0.06	-0.05	-0.10
C22	0.09	-0.06	-0.06	0.05	-0.03	-0.08	0.02	0.01	-0.02	0.00	-0.01	0.02	-0.04	-0.06	-0.05	-0.06	0.04	-0.02	-0.05	-0.20	-0.28	0.95	-0.16	-0.04	-0.08	0.17	-0.05	0.06
C23	0.13	-0.08	0.06	-0.06	-0.03	0.07	-0.08	0.03	-0.01	0.02	0.05	-0.03	-0.02	-0.03	-0.07	0.10	-0.05	0.04	-0.09	-0.06	-0.11	-0.16	0.96	-0.30	0.09	-0.24	0.14	-0.01
C24	-0.17	0.15	0.04	0.02	0.04	-0.08	-0.08	0.14	0.00	-0.06	0.01	0.07	-0.11	-0.01	-0.12	-0.07	-0.05	-0.02	-0.12	-0.04	-0.06	-0.04	-0.30	0.96	-0.16	0.13	-0.12	-0.04
C25	0.12	-0.13	-0.06	0.01	0.04	-0.08	0.09	-0.06	0.07	0.00	-0.04	0.03	-0.09	0.01	0.05	-0.12	0.05	0.00	0.07	-0.02	0.05	-0.08	0.09	-0.16	0.95	-0.38	-0.18	-0.08
C26	-0.08	0.15	-0.04	-0.03	-0.10	-0.14	0.00	-0.01	-0.04	-0.06	0.01	0.14	-0.05	0.06	0.00	-0.04	-0.07	-0.01	0.02	-0.08	0.06	0.17	-0.24	0.13	-0.38	0.96	-0.11	-0.13
C27	-0.06	0.04	0.00	0.01	-0.06	0.19	-0.18	0.05	-0.08	0.09	-0.02	0.05	0.07	0.02	-0.17	0.08	-0.02	0.04	-0.14	0.05	-0.05	-0.05	0.14	-0.12	-0.18	-0.11	0.94	-0.29

Anti-image Correlation (Continued)

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28
C28	0.04	-0.06	-0.02	-0.05	0.04	0.01	0.03	0.03	0.05	-0.09	-0.01	-0.05	0.03	-0.02	0.04	-0.05	0.05	0.00	0.05	-0.02	-0.1	0.06	-0.01	-0.04	-0.08	-0.13	-0.29	0.97
C29	-0.01	0.03	0.00	-0.05	0.11	-0.04	0.08	-0.01	-0.03	-0.01	0.01	-0.03	-0.04	0.02	-0.05	0.02	-0.03	0.00	-0.02	0.03	0.03	-0.01	-0.12	0.11	0.03	-0.08	-0.05	-0.32
C30	-0.05	0.01	0.03	0.07	-0.18	0.06	0.00	-0.11	0.08	-0.12	0.06	-0.04	0.05	0.04	0.02	-0.01	0.05	-0.02	0.10	0.05	0.03	-0.14	0.06	-0.09	-0.07	-0.04	0.04	-0.04
C31	0.08	-0.02	-0.06	-0.01	0.04	-0.10	0.03	-0.06	0.11	0.00	0.02	-0.07	0.04	-0.11	0.08	0.03	0.13	-0.05	0.03	-0.10	-0.04	0.01	0.09	-0.10	0.03	-0.07	-0.11	-0.01
C32	-0.01	0.00	0.03	-0.10	0.01	0.01	0.07	-0.05	0.02	0.08	-0.07	0.05	-0.09	-0.04	0.03	-0.06	-0.09	0.00	0.06	-0.02	0.10	-0.01	0.01	0.06	0.05	-0.04	-0.03	-0.05
C33	0.08	-0.04	0.00	0.01	0.01	-0.02	0.01	-0.03	0.02	-0.05	0.04	-0.11	0.07	0.08	0.06	-0.10	0.09	-0.16	-0.06	0.04	0.04	-0.02	-0.05	0.04	0.02	-0.05	0.05	-0.05
C34	0.03	-0.02	0.01	-0.07	0.01	0.04	-0.04	0.05	-0.07	0.17	-0.13	0.05	-0.04	-0.07	-0.02	0.09	-0.17	0.11	0.00	-0.09	-0.06	0.14	-0.02	-0.11	-0.07	0.04	-0.09	0.05
C35	-0.09	0.06	-0.04	0.01	0.01	-0.03	-0.04	0.01	0.11	-0.04	0.10	0.03	-0.03	-0.02	-0.02	0.05	-0.08	-0.08	-0.02	0.07	0.02	-0.09	0.03	0.19	-0.12	-0.03	-0.02	-0.07
C36	0.08	-0.12	0.00	0.05	0.06	-0.03	-0.04	0.01	-0.02	0.00	-0.02	-0.03	0.01	-0.02	-0.02	-0.17	0.04	0.06	0.15	-0.05	0.08	-0.16	0.02	0.02	0.16	-0.10	0.02	-0.01
C37	-0.14	0.13	-0.01	0.10	-0.08	0.02	-0.03	-0.03	-0.02	-0.04	0.04	0.08	-0.04	0.09	0.03	-0.03	-0.08	-0.01	0.10	-0.02	0.04	0.04	-0.08	-0.05	-0.01	-0.03	0.06	-0.03
C38	0.01	-0.02	0.13	-0.06	-0.03	0.00	0.04	0.04	0.03	0.01	-0.03	-0.01	0.05	0.02	0.03	0.12	-0.03	-0.10	-0.15	0.04	-0.06	0.08	0.08	-0.05	-0.07	-0.01	-0.10	0.01
C39	0.07	-0.05	-0.02	-0.11	0.02	-0.02	0.03	-0.10	-0.10	0.06	0.08	-0.05	0.02	-0.10	0.02	0.05	0.01	0.00	-0.05	-0.03	-0.03	-0.02	0.11	-0.02	-0.02	0.06	0.05	-0.01
C40	-0.06	0.05	-0.03	0.03	0.03	0.06	0.04	-0.03	0.09	-0.01	-0.03	-0.07	0.09	-0.05	-0.07	0.00	0.00	-0.08	0.03	0.21	0.07	-0.19	-0.03	0.01	0.01	-0.03	-0.03	0.05
C41	0.06	-0.08	0.13	0.01	-0.09	-0.02	-0.04	-0.02	-0.05	-0.01	-0.05	-0.02	0.03	0.08	0.00	0.08	0.07	0.09	0.02	-0.09	0.04	-0.03	-0.03	-0.04	0.04	0.00	0.09	-0.08
C42	-0.04	0.07	-0.1	0.05	-0.07	0.03	0.00	-0.01	0.02	0.02	0.03	-0.02	0.01	0.06	-0.08	-0.15	-0.05	-0.01	0.10	0.06	-0.03	-0.04	0.00	-0.05	-0.01	0.03	-0.08	-0.06
C43	-0.06	0.03	0.05	-0.01	-0.04	0.07	-0.02	0.00	-0.03	-0.06	0.01	0.10	-0.03	-0.13	0.01	0.06	-0.04	0.02	-0.15	0.01	-0.11	0.16	-0.04	0.03	-0.12	0.04	0.10	0.07
C44	0.00	-0.01	-0.06	-0.01	0.07	0.03	-0.04	0.07	-0.13	0.08	-0.05	0.01	0.02	0.10	-0.08	-0.01	0.07	0.06	0.00	-0.13	0.00	-0.06	-0.03	0.00	0.03	-0.04	0.02	0.04
C45	0.12	-0.13	0.07	-0.05	-0.08	0.09	-0.05	0.04	0.10	0.02	-0.05	-0.09	-0.04	-0.04	0.13	0.01	-0.05	-0.02	0.05	0.07	-0.03	0.02	0.05	-0.03	-0.02	0.01	0.03	-0.1
C46	-0.03	0.04	-0.09	-0.01	0.09	-0.05	0.1	-0.04	0.00	0.01	-0.07	0.03	0.01	-0.05	0.03	-0.02	0.04	0.14	-0.11	0.02	0.00	0.06	-0.01	-0.07	0.01	0.01	-0.10	-0.02
C47	-0.12	0.15	-0.06	-0.07	0.04	-0.18	0.05	0.06	0.02	0.02	-0.05	0.12	-0.14	-0.08	0.01	-0.01	-0.05	-0.07	0.00	-0.18	-0.02	0.17	-0.03	0.06	0.04	0.04	-0.06	0.04
C48	0.12	-0.09	0.08	-0.02	-0.02	-0.02	-0.03	0.04	-0.04	0.06	-0.09	-0.04	0.03	0.05	-0.01	-0.09	0.11	-0.06	-0.05	-0.04	0.02	0.08	-0.01	0.00	-0.03	-0.02	0.05	-0.04
C49	0.02	-0.03	-0.06	0.10	0.05	-0.05	-0.02	0.07	-0.09	-0.03	0.13	0.01	-0.06	0.08	-0.08	0.09	0.07	-0.10	-0.08	0.00	0.01	0.05	-0.08	0.00	0.02	0.02	0.03	-0.05
C50	-0.17	0.13	0.09	-0.07	0.00	0.06	0.07	-0.1	0.13	-0.07	0.01	-0.08	0.00	-0.08	0.01	0.03	-0.12	0.08	-0.01	-0.04	0.01	-0.06	-0.02	0.10	-0.03	0.01	-0.02	0.03
C51	0.07	-0.08	0.01	0.08	-0.03	-0.04	0.01	0.04	-0.05	-0.02	0.02	0.02	0.06	0.03	0.01	0.00	0.04	-0.02	0.06	0.09	-0.02	-0.07	0.05	-0.06	0.00	0.01	-0.03	0.02
C52	0.13	-0.13	-0.03	-0.06	0.04	0.07	-0.02	0.02	0.03	-0.03	-0.08	0.02	-0.03	0.04	-0.04	-0.02	0.00	0.03	-0.03	-0.04	0.04	-0.08	0.02	0.01	0.09	-0.08	0.04	-0.05
C53	-0.03	0.07	-0.02	-0.02	0.01	-0.03	-0.01	0.01	0.02	-0.09	0.04	0.01	0.07	-0.06	0.12	-0.05	0.01	0.02	0.08	-0.03	0.00	-0.03	-0.08	0.01	-0.05	0.05	-0.16	0.16
C54	-0.06	0.04	0.04	0.04	-0.09	0.02	-0.07	-0.03	-0.01	-0.03	0.09	0.00	0.05	0.04	-0.03	0.02	-0.07	0.13	-0.05	-0.01	-0.17	0.03	0.16	-0.05	0.00	0.09	0.08	-0.08
C55	0.08	-0.07	-0.11	0.06	0.10	0.04	0.00	0.01	-0.13	0.13	-0.07	-0.04	0.06	-0.09	-0.01	0.03	0.04	-0.10	-0.04	0.00	0.11	0.02	-0.10	0.04	-0.02	-0.03	-0.02	0.08
C56	-0.08	0.03	0.04	0.01	-0.08	-0.03	0.05	-0.05	0.08	-0.06	-0.01	-0.02	-0.11	0.15	-0.05	-0.02	0.00	0.03	0.06	0.07	0.00	0.01	-0.07	0.00	-0.08	0.06	-0.02	-0.03

Anti-image Correlation (Continued)

	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45	C46	C47	C48	C49	C50	C51	C52	C53	C54	C55	C56
C1	-0.01	-0.05	0.08	-0.01	0.08	0.03	-0.09	0.08	-0.14	0.01	0.07	-0.06	0.06	-0.04	-0.06	0.00	0.12	-0.03	-0.12	0.12	0.02	-0.17	0.07	0.13	-0.03	-0.06	0.08	-0.08
C2	0.03	0.01	-0.02	0.00	-0.04	-0.02	0.06	-0.12	0.13	-0.02	-0.05	0.05	-0.08	0.07	0.03	-0.01	-0.13	0.04	0.15	-0.09	-0.03	0.13	-0.08	-0.13	0.07	0.04	-0.07	0.03
C3	0.00	0.03	-0.06	0.03	0.00	0.01	-0.04	0.00	-0.01	0.13	-0.02	-0.03	0.13	-0.10	0.05	-0.06	0.07	-0.09	-0.06	0.08	-0.06	0.09	0.01	-0.03	-0.02	0.04	-0.11	0.04
C4	-0.05	0.07	-0.01	-0.10	0.01	-0.07	0.01	0.05	0.10	-0.06	-0.11	0.03	0.01	0.05	-0.01	-0.01	-0.05	-0.01	-0.07	-0.02	0.10	-0.07	0.08	-0.06	-0.02	0.04	0.06	0.01
C5	0.11	-0.18	0.04	0.01	0.01	0.01	0.01	0.06	-0.08	-0.03	0.02	0.03	-0.09	-0.07	-0.04	0.07	-0.08	0.09	0.04	-0.02	0.05	0.00	-0.03	0.04	0.01	-0.09	0.10	-0.08
C6	-0.04	0.06	-0.10	0.01	-0.02	0.04	-0.03	-0.03	0.02	0.00	-0.02	0.06	-0.02	0.03	0.07	0.03	0.09	-0.05	-0.18	-0.02	-0.05	0.06	-0.04	0.07	-0.03	0.02	0.04	-0.03
C7	0.08	0.00	0.03	0.07	0.01	-0.04	-0.04	-0.04	-0.03	0.04	0.03	0.04	-0.04	0.00	-0.02	-0.04	-0.05	0.10	0.05	-0.03	-0.02	0.07	0.01	-0.02	-0.01	-0.07	0.00	0.05
C8	-0.01	-0.11	-0.06	-0.05	-0.03	0.05	0.01	0.01	-0.03	0.04	-0.10	-0.03	-0.02	-0.01	0.00	0.07	0.04	-0.04	0.06	0.04	0.07	-0.10	0.04	0.02	0.01	-0.03	0.01	-0.05
C9	-0.03	0.08	0.11	0.02	0.02	-0.07	0.11	-0.02	-0.02	0.03	-0.10	0.09	-0.05	0.02	-0.03	-0.13	0.10	0.00	0.02	-0.04	-0.09	0.13	-0.05	0.03	0.02	-0.01	-0.13	0.08
C10	-0.01	-0.12	0.00	0.08	-0.05	0.17	-0.04	0.00	-0.04	0.01	0.06	-0.01	-0.01	0.02	-0.06	0.08	0.02	0.01	0.02	0.06	-0.03	-0.07	-0.02	-0.03	-0.09	-0.03	0.13	-0.06
C11	0.01	0.06	0.02	-0.07	0.04	-0.13	0.10	-0.02	0.04	-0.03	0.08	-0.03	-0.05	0.03	0.01	-0.05	-0.05	-0.07	-0.05	-0.09	0.13	0.01	0.02	-0.08	0.04	0.09	-0.07	-0.01
C12	-0.03	-0.04	-0.07	0.05	-0.11	0.05	0.03	-0.03	0.08	-0.01	-0.05	-0.07	-0.02	-0.02	0.10	0.01	-0.09	0.03	0.12	-0.04	0.01	-0.08	0.02	0.02	0.01	0.00	-0.04	-0.02
C13	-0.04	0.05	0.04	-0.09	0.07	-0.04	-0.03	0.01	-0.04	0.05	0.02	0.09	0.03	0.01	-0.03	0.02	-0.04	0.01	-0.14	0.03	-0.06	0.00	0.06	-0.03	0.07	0.05	0.06	-0.11
C14	0.02	0.04	-0.11	-0.04	0.08	-0.07	-0.02	-0.02	0.09	0.02	-0.10	-0.05	0.08	0.06	-0.13	0.10	-0.04	-0.05	-0.08	0.05	0.08	-0.08	0.03	0.04	-0.06	0.04	-0.09	0.15
C15	-0.05	0.02	0.08	0.03	0.06	-0.02	-0.02	-0.02	0.03	0.03	0.02	-0.07	0.00	-0.08	0.01	-0.08	0.13	0.03	0.01	-0.01	-0.08	0.01	0.01	-0.04	0.12	-0.03	-0.01	-0.05
C16	0.02	-0.01	0.03	-0.06	-0.10	0.09	0.05	-0.17	-0.03	0.12	0.05	0.00	0.08	-0.15	0.06	-0.01	0.01	-0.02	-0.01	-0.09	0.09	0.03	0.00	-0.02	-0.05	0.02	0.03	-0.02
C17	-0.03	0.05	0.13	-0.09	0.09	-0.17	-0.08	0.04	-0.08	-0.03	0.01	0.00	0.07	-0.05	-0.04	0.07	-0.05	0.04	-0.05	0.11	0.07	-0.12	0.04	0.00	0.01	-0.07	0.04	0.00
C18	0.00	-0.02	-0.05	0.00	-0.16	0.11	-0.08	0.06	-0.01	-0.10	0.00	-0.08	0.09	-0.01	0.02	0.06	-0.02	0.14	-0.07	-0.06	-0.10	0.08	-0.02	0.03	0.02	0.13	-0.10	0.03
C19	-0.02	0.10	0.03	0.06	-0.06	0.00	-0.02	0.15	0.10	-0.15	-0.05	0.03	0.02	0.10	-0.15	0.00	0.05	-0.11	0.00	-0.05	-0.08	-0.01	0.06	-0.03	0.08	-0.05	-0.04	0.06
C20	0.03	0.05	-0.10	-0.02	0.04	-0.09	0.07	-0.05	-0.02	0.04	-0.03	0.21	-0.09	0.06	0.01	-0.13	0.07	0.02	-0.18	-0.04	0.00	-0.04	0.09	-0.04	-0.03	-0.01	0.00	0.07
C21	0.03	0.03	-0.04	0.10	0.04	-0.06	0.02	0.08	0.04	-0.06	-0.03	0.07	0.04	-0.03	-0.11	0.00	-0.03	0.00	-0.02	0.02	0.01	0.01	-0.02	0.04	0.00	-0.17	0.11	0.00
C22	-0.01	-0.14	0.01	-0.01	-0.02	0.14	-0.09	-0.16	0.04	0.08	-0.02	-0.19	-0.03	-0.04	0.16	-0.06	0.02	0.06	0.17	0.08	0.05	-0.06	-0.07	-0.08	-0.03	0.03	0.02	0.01
C23	-0.12	0.06	0.09	0.01	-0.05	-0.02	0.03	0.02	-0.08	0.08	0.11	-0.03	-0.03	0.00	-0.04	-0.03	0.05	-0.01	-0.03	-0.01	-0.08	-0.02	0.05	0.02	-0.08	0.16	-0.10	-0.07
C24	0.11	-0.09	-0.10	0.06	0.04	-0.11	0.19	0.02	-0.05	-0.05	-0.02	0.01	-0.04	-0.05	0.03	0.00	-0.03	-0.07	0.06	0.00	0.00	0.10	-0.06	0.01	0.01	-0.05	0.04	0.00
C25	0.03	-0.07	0.03	0.05	0.02	-0.07	-0.12	0.16	-0.01	-0.07	-0.02	0.01	0.04	-0.01	-0.12	0.03	-0.02	0.01	0.04	-0.03	0.02	-0.03	0.00	0.09	-0.05	0.00	-0.02	-0.08
C26	-0.08	-0.04	-0.07	-0.04	-0.05	0.04	-0.03	-0.10	-0.03	-0.01	0.06	-0.03	0.00	0.03	0.04	-0.04	0.01	0.01	0.04	-0.02	0.02	0.01	0.01	-0.08	0.05	0.09	-0.03	0.06
C27	-0.05	0.04	-0.11	-0.03	0.05	-0.09	-0.02	0.02	0.06	-0.10	0.05	-0.03	0.09	-0.08	0.10	0.02	0.03	-0.10	-0.06	0.05	0.03	-0.02	-0.03	0.04	-0.16	0.08	-0.02	-0.02

Anti-image Correlation (Continued)

	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45	C46	C47	C48	C49	C50	C51	C52	C53	C54	C55	C56
C28	-0.32	-0.04	-0.01	-0.05	-0.05	0.05	-0.07	-0.01	-0.03	0.01	-0.01	0.05	-0.08	-0.06	0.07	0.04	-0.10	-0.02	0.04	-0.04	-0.05	0.03	0.02	-0.05	0.16	-0.08	0.08	-0.03
C29	0.96	-0.11	-0.26	0.01	-0.11	0.03	0.04	0.09	-0.07	0.04	0.00	-0.11	0.06	-0.07	-0.06	0.03	-0.07	0.06	0.08	0.02	0.00	0.03	-0.09	0.07	-0.07	-0.11	0.07	0.00
C30	-0.11	0.95	-0.16	-0.16	0.03	-0.21	0.01	0.03	0.03	-0.12	-0.01	0.06	0.05	0.03	0.00	-0.01	-0.01	-0.15	0.00	-0.01	-0.13	-0.04	0.01	-0.06	0.18	-0.04	-0.12	0.13
C31	-0.26	-0.16	0.96	-0.25	-0.06	-0.02	0.00	0.01	-0.09	0.18	-0.07	0.02	-0.11	0.00	-0.06	-0.04	0.03	0.05	-0.03	0.01	0.12	-0.08	0.03	-0.02	0.03	0.02	0.01	-0.11
C32	0.01	-0.16	-0.25	0.96	-0.18	-0.04	-0.04	-0.05	0.13	-0.04	0.05	-0.05	0.06	-0.04	0.03	-0.06	0.06	-0.01	0.01	0.01	-0.15	0.04	-0.02	-0.03	-0.04	-0.04	0.01	0.03
C33	-0.11	0.03	-0.06	-0.18	0.95	-0.36	-0.04	0.07	-0.07	-0.06	-0.04	0.12	0.03	-0.08	0.00	-0.08	0.06	0.01	-0.08	0.09	0.10	-0.03	-0.09	0.08	-0.03	-0.02	0.04	-0.07
C34	0.03	-0.21	-0.02	-0.04	-0.36	0.90	-0.48	-0.06	0.08	0.02	0.03	-0.06	-0.01	0.07	0.00	0.02	-0.01	0.06	0.10	0.02	-0.03	-0.01	0.00	-0.05	-0.11	0.11	-0.05	0.03
C35	0.04	0.01	0.00	-0.04	-0.04	-0.48	0.91	-0.09	-0.06	0.04	0.07	0.03	-0.04	0.03	-0.04	-0.01	-0.03	0.03	-0.03	-0.11	-0.02	0.09	0.06	-0.01	-0.02	-0.04	0.01	-0.01
C36	0.09	0.03	0.01	-0.05	0.07	-0.06	-0.09	0.92	-0.47	-0.22	-0.12	0.02	-0.01	-0.03	-0.12	0.04	-0.04	0.02	-0.01	-0.05	-0.03	0.06	-0.05	0.14	0.01	0.00	-0.06	-0.01
C37	-0.07	0.03	-0.09	0.13	-0.07	0.08	-0.06	-0.47	0.93	-0.26	-0.18	-0.10	0.03	0.06	0.00	-0.07	0.01	-0.03	-0.03	-0.01	-0.02	-0.08	0.07	-0.08	0.01	0.01	0.02	0.01
C38	0.04	-0.12	0.18	-0.04	-0.06	0.02	0.04	-0.22	-0.26	0.92	-0.18	-0.09	0.06	-0.04	0.02	0.01	0.00	-0.05	-0.02	0.14	-0.01	0.01	0.02	-0.11	-0.14	0.04	-0.01	-0.01
C39	0.00	-0.01	-0.07	0.05	-0.04	0.03	0.07	-0.12	-0.18	-0.18	0.94	-0.39	-0.09	0.06	-0.02	-0.07	0.05	0.06	0.05	-0.02	-0.02	0.01	-0.05	0.05	0.04	0.04	0.01	-0.09
C40	-0.11	0.06	0.02	-0.05	0.12	-0.06	0.03	0.02	-0.10	-0.09	-0.39	0.93	-0.29	-0.12	-0.07	0.09	-0.04	-0.03	-0.11	-0.11	0.05	0.00	0.01	0.03	0.02	-0.03	0.01	0.05
C41	0.06	0.05	-0.11	0.06	0.03	-0.01	-0.04	-0.01	0.03	0.06	-0.09	-0.29	0.94	-0.21	-0.01	-0.10	0.10	-0.04	-0.13	0.13	-0.14	-0.02	-0.01	0.04	-0.01	0.00	-0.01	0.02
C42	-0.07	0.03	0.00	-0.04	-0.08	0.07	0.03	-0.03	0.06	-0.04	0.06	-0.12	-0.21	0.97	-0.20	-0.03	-0.09	-0.01	0.09	-0.06	-0.05	-0.05	0.04	0.03	-0.02	0.04	-0.04	0.03
C43	-0.06	0.00	-0.06	0.03	0.00	0.00	-0.04	-0.12	0.00	0.02	-0.02	-0.07	-0.01	-0.20	0.96	-0.34	0.02	-0.09	-0.04	-0.03	0.09	0.06	-0.10	-0.08	0.09	-0.03	0.10	-0.10
C44	0.03	-0.01	-0.04	-0.06	-0.08	0.02	-0.01	0.04	-0.07	0.01	-0.07	0.09	-0.10	-0.03	-0.34	0.96	-0.43	0.03	-0.03	-0.06	-0.01	-0.02	-0.03	0.01	0.04	-0.06	-0.03	0.11
C45	-0.07	-0.01	0.03	0.06	0.06	-0.01	-0.03	-0.04	0.01	0.00	0.05	-0.04	0.10	-0.09	0.02	-0.43	0.95	-0.22	-0.15	0.05	-0.07	-0.05	-0.01	-0.04	-0.03	0.03	-0.03	-0.03
C46	0.06	-0.15	0.05	-0.01	0.01	0.06	0.03	0.02	-0.03	-0.05	0.06	-0.03	-0.04	-0.01	-0.09	0.03	-0.22	0.97	-0.17	-0.11	-0.02	-0.05	-0.07	0.03	-0.03	-0.04	0.04	0.01
C47	0.08	0.00	-0.03	0.01	-0.08	0.10	-0.03	-0.01	-0.03	-0.02	0.05	-0.11	-0.13	0.09	-0.04	-0.03	-0.15	-0.17	0.96	-0.29	-0.01	0.01	-0.03	-0.07	-0.02	0.07	-0.09	-0.01
C48	0.02	-0.01	0.01	0.01	0.09	0.02	-0.11	-0.05	-0.01	0.14	-0.02	-0.11	0.13	-0.06	-0.03	-0.06	0.05	-0.11	-0.29	0.96	-0.27	-0.17	-0.05	0.04	-0.03	-0.03	-0.02	0.02
C49	0.00	-0.13	0.12	-0.15	0.10	-0.03	-0.02	-0.03	-0.02	-0.01	-0.02	0.05	-0.14	-0.05	0.09	-0.01	-0.07	-0.02	-0.01	-0.27	0.95	-0.24	-0.08	-0.02	0.01	-0.08	0.14	-0.16
C50	0.03	-0.04	-0.08	0.04	-0.03	-0.01	0.09	0.06	-0.08	0.01	0.01	0.00	-0.02	-0.05	0.06	-0.02	-0.05	-0.05	0.01	-0.17	-0.24	0.95	-0.28	-0.09	-0.10	0.00	-0.10	0.11
C51	-0.09	0.01	0.03	-0.02	-0.09	0.00	0.06	-0.05	0.07	0.02	-0.05	0.01	-0.01	0.04	-0.10	-0.03	-0.01	-0.07	-0.03	-0.05	-0.08	-0.28	0.96	-0.30	-0.06	0.10	-0.07	-0.02
C52	0.07	-0.06	-0.02	-0.03	0.08	-0.05	-0.01	0.14	-0.08	-0.11	0.05	0.03	0.04	0.03	-0.08	0.01	-0.04	0.03	-0.07	0.04	-0.02	-0.09	-0.30	0.95	-0.17	-0.05	-0.09	0.04
C53	-0.07	0.18	0.03	-0.04	-0.03	-0.11	-0.02	0.01	0.01	-0.14	0.04	0.02	-0.01	-0.02	0.09	0.04	-0.03	-0.03	-0.02	-0.03	0.01	-0.10	-0.06	-0.17	0.90	-0.48	0.09	-0.12
C54	-0.11	-0.04	0.02	-0.04	-0.02	0.11	-0.04	0.00	0.01	0.04	0.04	-0.03	0.00	0.04	-0.03	-0.06	0.03	-0.04	0.07	-0.03	-0.08	0.00	0.10	-0.05	-0.48	0.87	-0.32	-0.17
C55	0.07	-0.12	0.01	0.01	0.04	-0.05	0.01	-0.06	0.02	-0.01	0.01	0.01	-0.01	-0.04	0.10	-0.03	-0.03	0.04	-0.09	-0.02	0.14	-0.10	-0.07	-0.09	0.09	-0.32	0.89	-0.51
C56	0.00	0.13	-0.11	0.03	-0.07	0.03	-0.01	-0.01	0.01	-0.01	-0.09	0.05	0.02	0.03	-0.10	0.11	-0.03	0.01	-0.01	0.02	-0.16	0.11	-0.02	0.04	-0.12	-0.17	-0.51	0.90

Table 5.4 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.947
Bartlett's Test of Sphericity	Approx. Chi-Square	18934.632
	df	1540
	Sig.	.000

Table 5.5 Factor Extraction

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	20.677	36.923	36.923	20.677	36.923	36.923
2	3.765	6.723	43.646	3.765	6.723	43.646
3	3.476	6.208	49.854	3.476	6.208	49.854
4	2.238	3.996	53.850	2.238	3.996	53.850
5	1.897	3.387	57.237	1.897	3.387	57.237
6	1.696	3.028	60.265	1.696	3.028	60.265
7	1.311	2.342	62.607	1.311	2.342	62.607
8	1.223	2.184	64.791	1.223	2.184	64.791
9	0.996	1.779	66.570			
10	0.932	1.664	68.233			
11	0.903	1.612	69.845			
12	0.895	1.599	71.444			
13	0.798	1.425	72.869			
14	0.755	1.348	74.217			
15	0.714	1.276	75.493			
16	0.692	1.236	76.729			
17	0.633	1.130	77.859			
18	0.625	1.115	78.975			
19	0.602	1.075	80.049			
20	0.573	1.023	81.072			
21	0.530	0.946	82.018			
22	0.523	0.934	82.952			
23	0.502	0.896	83.849			
24	0.488	0.871	84.719			
25	0.454	0.811	85.531			
26	0.442	0.790	86.320			
27	0.421	0.751	87.071			
28	0.406	0.725	87.796			
29	0.398	0.712	88.508			
30	0.390	0.697	89.205			
31	0.369	0.659	89.864			
32	0.353	0.631	90.494			
33	0.343	0.613	91.107			
34	0.332	0.592	91.700			
35	0.317	0.566	92.265			

Table 5.5 (Continued)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
36	0.309	0.551	92.817			
37	0.301	0.538	93.354			
38	0.279	0.499	93.853			
39	0.271	0.484	94.337			
40	0.269	0.481	94.819			
41	0.263	0.469	95.288			
42	0.245	0.438	95.726			
43	0.227	0.405	96.131			
44	0.216	0.386	96.518			
45	0.214	0.382	96.899			
46	0.205	0.367	97.266			
47	0.199	0.355	97.621			
48	0.190	0.339	97.959			
49	0.179	0.320	98.279			
50	0.171	0.305	98.584			
51	0.163	0.291	98.875			
52	0.154	0.275	99.150			
53	0.149	0.266	99.416			
54	0.140	0.251	99.667			
55	0.127	0.227	99.894			
56	0.059	0.106	100.000			

Table 5.6 VARIMAX Rotated Component Matrix

	Component							
	1	2	3	4	5	6	7	8
C1							-0.890	
C2							-0.902	
C3						0.690		
C4						0.656		
C5						0.618		
C6	0.506							
C7						0.471		
C8						0.441		
C9	0.678							
C10	0.712							
C11	0.630							
C12	0.669							
C13	0.694							
C14	0.716							
C15	0.757							
C16	0.440							
C17								0.583
C18	0.726							
C19	0.660							
C20	0.661							
C21	0.696							
C22	0.683							
C23	0.620							
C24	0.674							
C25		0.674						
C26		0.629						
C27		0.681						
C28		0.674						
C29		0.634						
C30		0.630						
C31		0.655						
C32		0.683						
C33		0.687						
C34		0.745						
C35		0.671						
C36				0.791				
C37				0.792				
C38				0.703				
C39				0.783				
C40				0.731				
C41				0.494				

Table 5.6 (Continued)

	Component							
	1	2	3	4	5	6	7	8
C42								
C43			0.517					
C44			0.642					
C45			0.680					
C46			0.686					
C47			0.673					
C48			0.687					
C49			0.626					
C50			0.649					
C51			0.616					
C52			0.531					
C53					0.711			
C54					0.830			
C55					0.750			
C56					0.785			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 7 iterations.

Table 5.7 Pattern Matrix with OBLIMIN Rotation

	Component							
	1	2	3	4	5	6	7	8
C1					0.952864			
C2					0.966196			
C3							-0.74738	
C4							-0.69759	
C5							-0.63734	
C6							-0.51883	
C7							-0.48947	
C8							-0.45666	
C9	0.511606							
C10	0.567682							
C11	0.485701							
C12	0.508382							
C13	0.550784							
C14	0.690832							
C15	0.690996							
C16								
C17								-0.559
C18	0.735196							
C19	0.796076							
C20	0.611189							
C21	0.624572							
C22	0.617675							
C23	0.509538							
C24	0.628528							
C25		0.633445						
C26		0.537534						
C27		0.682782						
C28		0.647348						
C29		0.604659						
C30		0.618243						
C31		0.632247						
C32		0.669829						
C33		0.652913						
C34		0.746354						
C35		0.677439						
C36				-0.84412				
C37				-0.83495				
C38				-0.76514				
C39				-0.82057				
C40				-0.74749				
C41				-0.45576				

Table 5.7 (Continued)

	Component							
	1	2	3	4	5	6	7	8
C42								
C43						-0.47537		
C44						-0.64535		
C45						-0.7121		
C46						-0.72341		
C47						-0.6903		
C48						-0.69443		
C49						-0.59215		
C50						-0.63078		
C51						-0.58981		
C52						-0.50442		
C53			0.722127					
C54			0.873618					
C55			0.780386					
C56			0.834388					

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a Rotation converged in 12 iterations.

Table 5.8: Cross-tabulation of Gender

			Regroup Gender		
			male	female	Total
Internet banking (A8)	Internet banking User	Count	150	127	277
		Expected Count	137.3	139.7	277.0
		% within A8	54.2%	45.8%	100.0%
		% within Regroup Gender	65.8%	54.7%	60.2%
		% of Total	32.6%	27.6%	60.2%
	Non-Internet banking User	Count	78	105	183
		Expected Count	90.7	92.3	183.0
		% within A8	42.6%	57.4%	100.0%
		% within Regroup Gender	34.2%	45.3%	39.8%
		% of Total	17.0%	22.8%	39.8%
Total		Count	228	232	460
		Expected Count	228.0	232.0	460.0
		% within A8	49.6%	50.4%	100.0%
		% within Regroup Gender	100.0%	100.0%	100.0%
		% of Total	49.6%	50.4%	100.0%

Table 5.9: Cross-tabulation of Age

			RegroupAge			
			Young	Middle	Old	Total
Internet banking (A8)	Internet Banking User	Count	215	47	15	277
		Expected Count	189.7	61.4	25.9	277.0
		% within A8	77.6%	17.0%	5.4%	100.0%
		% within RegroupAge	68.3%	46.1%	34.9%	60.2%
		% of Total	46.7%	10.2%	3.3%	60.2%
	Non-Internet banking User	Count	100	55	28	183
		Expected Count	125.3	40.6	17.1	183.0
		% within A8	54.6%	30.1%	15.3%	100.0%
		% within RegroupAge	31.7%	53.9%	65.1%	39.8%
		% of Total	21.7%	12.0%	6.1%	39.8%
Total		Count	315	102	43	460
		Expected Count	315.0	102.0	43.0	460.0
		% within A8	68.5%	22.2%	9.3%	100.0%
		% within RegroupAge	100.0%	100.0%	100.0%	100.0%
		% of Total	68.5%	22.2%	9.3%	100.0%

Table 5.10: Cross-tabulation of marital status

			Regroup Married status			Total
			Single	Married	Divorce and Widowed	
Internet banking (A8)	**Internet banking User**	Count	139	128	10	277
		Expected Count	120.4	146.9	9.6	277.0
		% within A8	50.2%	46.2%	3.6%	100.0%
		% within Regroup Married status	69.5%	52.5%	62.5%	60.2%
		% of Total	30.2%	27.8%	2.2%	60.2%
	Non-Internet banking user	Count	61	116	6	183
		Expected Count	79.6	97.1	6.4	183.0
		% within A8	33.3%	63.4%	3.3%	100.0%
		% within Regroup Married status	30.5%	47.5%	37.5%	39.8%
		% of Total	13.3%	25.2%	1.3%	39.8%
Total		Count	200	244	16	460
		Expected Count	200.0	244.0	16.0	460.0
		% within A8	43.5%	53.0%	3.5%	100.0%
		% within Regroup Married status	100.0%	100.0%	100.0%	100.0%
		% of Total	43.5%	53.0%	3.5%	100.0%

Table 5.11: Cross-tabulation of Education

			Regroup Education Level			
			Low	Middle	High	Total
Internet banking (A8)	**Internet banking User**	Count	6	159	112	277
		Expected Count	14.5	179.4	83.1	277.0
		% within A8	2.2%	57.4%	40.4%	100.0%
		% within Regroup Education Level	25.0%	53.4%	81.2%	60.2%
		% of Total	1.3%	34.6%	24.3%	60.2%
	Non-Internet banking User	Count	18	139	26	183
		Expected Count	9.5	118.6	54.9	183.0
		% within A8	9.8%	76.0%	14.2%	100.0%
		% within Regroup Education Level	75.0%	46.6%	18.8%	39.8%
		% of Total	3.9%	30.2%	5.7%	39.8%
Total		Count	24	298	138	460
		Expected Count	24.0	298.0	138.0	460.0
		% within A8	5.2%	64.8%	30.0%	100.0%
		% within Regroup Education Level	100.0%	100.0%	100.0%	100.0%
		% of Total	5.2%	64.8%	30.0%	100.0%

Table 5.12: Cross-tabulation of Occupation

			Regroup Occupation						
			Professional and Trade Person	Student	Civil Servant	Labor and Famer	Sales	Unemployed, Home maker, Retired and Others	Total
Internet Banking (A8)	**Internet Banking User**	Count	39	37	92	20	52	37	277
		Expected Count	37.3	33.7	73.5	28.3	63.2	40.9	277.0
		% within A8	14.1%	13.4%	33.2%	7.2%	18.8%	13.4%	100.0%
		% within RegroupOccupation	62.9%	66.1%	75.4%	42.6%	49.5%	54.4%	60.2%
		% of Total	8.5%	8.0%	20.0%	4.3%	11.3%	8.0%	60.2%
	Non-Internet Banking User	Count	23	19	30	27	53	31	183
		Expected Count	24.7	22.3	48.5	18.7	41.8	27.1	183.0
		% within A8	12.6%	10.4%	16.4%	14.8%	29.0%	16.9%	100.0%
		% within RegroupOccupation	37.1%	33.9%	24.6%	57.4%	50.5%	45.6%	39.8%
		% of Total	5.0%	4.1%	6.5%	5.9%	11.5%	6.7%	39.8%
Total		Count	62	56	122	47	105	68	460
		Expected Count	62.0	56.0	122.0	47.0	105.0	68.0	460.0
		% within A8	13.5%	12.2%	26.5%	10.2%	22.8%	14.8%	100.0%
		% within RegroupOccupation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	13.5%	12.2%	26.5%	10.2%	22.8%	14.8%	100.0%

Table 5.13: Cross-tabulation of Income

			Regroup Income			
			Low Income	Middle Income	High Income	Total
Internet banking (A8)	**Internet banking User**	Count	53	185	39	277
		Expected Count	68.6	168.6	39.7	277.0
		% within A8	19.1%	66.8%	14.1%	100.0%
		% within Regroup Income	46.5%	66.1%	59.1%	60.2%
		% of Total	11.5%	40.2%	8.5%	60.2%
	Non-Internet banking User	Count	61	95	27	183
		Expected Count	45.4	111.4	26.3	183.0
		% within A8	33.3%	51.9%	14.8%	100.0%
		% within Regroup Income	53.5%	33.9%	40.9%	39.8%
		% of Total	13.3%	20.7%	5.9%	39.8%
Total		Count	114	280	66	460
		Expected Count	114.0	280.0	66.0	460.0
		% within A8	24.8%	60.9%	14.3%	100.0%
		% within Regroup Income	100.0%	100.0%	100.0%	100.0%
		% of Total	24.8%	60.9%	14.3%	100.0%

Table 5.14: Cross-tabulation of Time to User Computer

			Regroup Use of Computer using		
			Short time	Long time	Total
Internet banking (A8)	**Internet banking User**	Count	221	56	277
		Expected Count	226.4	50.6	277.0
		% within A8	79.8%	20.2%	100.0%
		% within Regroup Use of Computer using	58.8%	66.7%	60.2%
		% of Total	48.0%	12.2%	60.2%
	Non-Internet banking User	Count	155	28	183
		Expected Count	149.6	33.4	183.0
		% within A8	84.7%	15.3%	100.0%
		% within Regroup Use of Computer using	41.2%	33.3%	39.8%
		% of Total	33.7%	6.1%	39.8%
Total		Count	376	84	460
		Expected Count	376.0	84.0	460.0
		% within A8	81.7%	18.3%	100.0%
		% within Regroup Use of Computer using	100.0%	100.0%	100.0%
		% of Total	81.7%	18.3%	100.0%

Table 5.15: The Reliability Test for the Measures of Internet banking adoption choice in China

Constructs	Items	Reliability Test
Internet Experience	6. I feel a sense of personal ownership about the use of Internet banking. 9. Using Internet banking services enables me to accomplish banking activities more quickly. 10. Using Internet banking services improves my performance of utilizing. 11. Using Internet banking services allows me to accomplish more banking activities than would otherwise be possible. 12. Using Internet banking services gives me greater control over financial banking activities. 13. Using Internet banking enables me to organize banking tasks. 14. Using Internet banking increases my free time. 15. Using Internet banking makes it easier to pay my bills. 16. When it comes to performing transactions such as transfer funds, I prefer to do internet banking rather then conventional banking. 18. Using Internet banking requires little mental effort. 19. Using Internet banking services can be fun. 21. Internet banking is an easy way to conduct a banking transaction. 22. Learning to operate Internet banking is easy for me. 23. I find Internet banking is flexible to interact with. 24. I find it easy to get Internet banking to do what I want to do.	**Cronbach Alpha = 0.950**
Perceived Security	25. The current security measures taken by banks to protect Internet banking are sufficient. 26. I am confident with the security aspects of internet banking. 27. Internet banking is just as secure as conventional banking. 28. The bank provides secure communication to ensure all payment transactions between the clients and the banks are safe. 29. The bank provides the latest encryption technology to prevent unauthorized intrusion. 30. I feel safe when I release credit card information to the bank. 31. The bank updates its anti virus software periodically to safeguard my data. 32. In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money. 33. After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my confidence in Internet banking has not been affected negatively. 34. Other people cannot tamper with information concerning my Internet banking transactions. 35. Other people have no way in knowing about my internet banking activities.	**Cronbach Alpha = 0.926**

Web Design/Features	43. I like the look and feel of the internet banking website. 44. Information displayed on the screen is clear, well organized, unambiguous and easy to read. 45. The website offers me enough information to answer my questions. 46. The website offers information in more than one language. 47. The positioning of information on the website allows me to navigate effortlessly through the site. 48. The links within the website allow me to move easily back and forth between sections of the website. 49. The internet banking website contains large fonts that are readable. 50. The search function within the site enables me to find the information I need. 51. The website updates information regularly. 52. Internet banking websites contain friendly terms.	**Cronbach Alpha = 0.918**
Internet Skills	36. I am very skilled at using the internet. 37. I consider myself knowledgably about good search techniques on the internet. 38. I know more about using the internet than most users. 39. I know how to find what I want on the internet using a search engine. 40. I am interested to hear about new technological developments. 41. Technological developments have enhanced our lives.	**Cronbach Alpha = 0.884**
Marketing Exposure	53. Internet banking has been widely advertised and promoted in local media such newspaper, magazines and TV. 54. My main bank advertises and promotes Internet banking frequently. 55. My bank uses its web site to promote its services. 56. My bank encourages me to use its web site.	**Cronbach Alpha = 0.859**
Reliability	3. I trust the ability of Internet banking to protect my privacy. 4. In the event that an error occurred during my online banking session, I am confident that the bank will be able to rectify the error and no erroneous transaction will be made. 5. I am confident of using Internet banking to perform transactions online. 7. Internet banking will replace conventional banking one day. 8. I will strongly recommend others to use Internet banking.	**Cronbach Alpha = 0.802**
Internet Prestige	1. Using Internet banking services gives me higher status among my peers. 2. Using internet banking services gives me more prestige among my peers.	**Cronbach Alpha = 0.956**

Table 5.16: Pearson Correlation Matrix

		fac1	fac2	fac3	fac4	fac5	fac6	fac7
Internet Experience	Pearson Correlation	1	0.605**	0.671**	0.533**	0.332**	0.642**	-0.351**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
	N	460	460	460	460	460	460	460
Perceived Security	Pearson Correlation	0.605**	1	0.586**	0.363**	0.410**	0.632**	-0.324**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
	N	460	460	460	460	460	460	460
Web Design/Feature	Pearson Correlation	0.671**	0.586**	1	0.588**	0.527**	0.476**	-0.164**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
	N	460	460	460	460	460	460	460
Internet Skill	Pearson Correlation	0.533**	0.363**	0.588**	1	0.285**	0.362**	-0.127**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.006
	N	460	460	460	460	460	460	460
Marketing Exposure	Pearson Correlation	0.332**	0.410**	0.527**	0.285**	1	0.319**	-0.036
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.441
	N	460	460	460	460	460	460	460
Reliability	Pearson Correlation	0.642**	0.632**	0.476**	0.362**	0.319**	1	-0.187**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
	N	460	460	460	460	460	460	460
Internet Prestige	Pearson Correlation	-0.351**	-0.324**	-0.164**	-0.127**	-0.036	-0.187**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.006	0.441	0.000	
	N	460	460	460	460	460	460	460

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.21: T-Test: Internet banking adoption Factor Relating to Gender

Factor	Gender	N	Mean	T	Sig.
Web Design/Feature	Male	228	4.416	0.094	0.031**
	Female	232	4.405		
Marketing Exposure	Male	228	4.007	-2.167	0.011**
	Female	232	4.288		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.22: ANOVA (F-tests) Results Relating to Age

Factor	Age	No. of Respondents	Mean	F	Sig.
Internet Experience	Young	315	4.694	9.270	0.000**
	Middle	102	4.295		
	Old	43	3.815		
Perceived Security	Young	315	3.747	6.364	0.002**
	Middle	102	3.310		
	Old	43	3.595		
Web Design/Feature	Young	315	4.511	3.909	0.021**
	Middle	102	4.251		
	Old	43	4.410		
Internet Skill	Young	315	5.001	9.288	0.000**
	Middle	102	4.503		
	Old	43	4.233		
Reliability	Young	315	4.041	6.921	0.001**
	Middle	102	3.794		
	Old	43	3.256		
Internet Prestige	Young	315	3.871	4.554	0.011**
	Middle	102	4.412		
	Old	43	4.605		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.23: ANOVA (F-tests) Results Relating to Married Status

Factor	Qualification	No. of Respondents	Mean	F	Sig.
Perceived Security	Single/never married	200	3.7641	2.694	0.069*
	Married	244	3.4583		
	Divorced/Separate and Widowed	16	3.5511		
Internet Skill	Single/never married	200	4.9958	3.337	0.036**
	Married	244	4.7049		
	Divorced/Separate and Widowed	16	4.3438		
Internet Prestige	Single/never married	200	3.7875	3.248	0.040**
	Married	244	4.2684		
	Divorced/Separate and Widowed	16	4.2813		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.24: ANOVA (F-tests) Results Relating to Qualification

Factor	Qualification	No. of Respondents	Mean	F	Sig.
Internet Experience	Low	24	3.695	7.700	0.001**
	Middle	298	4.452		
	High	138	4.820		
Perceived Security	Low	24	3.485	4.874	0.008**
	Middle	298	3.462		
	High	138	3.901		
Web Design/Feature	Low	24	4.133	6.642	0.001**
	Middle	298	4.291		
	High	138	4.717		
Internet Skill	Low	24	4.590	6.754	0.001**
	Middle	298	4.670		
	High	138	5.181		
Marketing Exposure	Low	24	4.385	4.104	0.017**
	Middle	298	4.012		
	High	138	4.402		
Reliability	Low	24	3.658	2.396	0.092*
	Middle	298	3.839		
	High	138	4.116		
Internet Prestige	Low	24	5.125	15.344	0.000**
	Middle	298	4.309		
	High	138	3.337		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table5.25: ANOVA (F-tests) Results Relating to Occupation

Factor	Qualification	No. of Respondents	Mean	F	Sig.
Internet Experience	Professional and Trade Person	62	4.6149	3.301	0.006**
	Student	56	4.6496		
	Civil Servant	122	4.8735		
	Laborer and Famer	47	4.0904		
	Unemployed, Home maker, Retired and Others	68	4.3566		
	Sales	105	4.2970		
Perceived Security	Professional and Trade Person	62	3.9633	5.229	0.000**
	Student	56	3.8198		
	Civil Servant	122	3.7757		
	Laborer and Famer	47	2.9091		
	Unemployed, Home maker, Retired and Others	68	3.6992		
	Sales	105	3.2848		
Web Design/Feature	Professional and Trade Person	62	4.7548	5.710	0.000**
	Student	56	4.5143		
	Civil Servant	122	4.6426		
	Laborer and Famer	47	3.7277		
	Unemployed, Home maker, Retired and Others	68	4.3235		
	Sales	105	4.2438		
Internet Skill	Professional and Trade Person	62	5.0403	4.321	0.001**
	Student	56	5.0387		
	Civil Servant	122	5.0697		
	Laborer and Famer	47	4.2199		
	Unemployed, Home maker, Retired and Others	68	4.4191		
	Sales	105	4.8063		
Marketing Exposure	Professional and Trade Person	62	4.4960	4.966	0.000**
	Student	56	4.4375		
	Civil Servant	122	4.2111		
	Laborer and Famer	47	3.3936		
	Unemployed, Home maker, Retired and Others	68	4.3309		
	Sales	105	3.9357		
Internet Prestige	Professional and Trade Person	62	4.2661	2.531	0.029**
	Student	283	3.9196		
	Civil Servant	122	3.5656		
	Laborer and Famer	47	4.5319		
	Unemployed, Home maker, Retired and Others	68	4.2721		
	Sales	105	4.2381		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.26: ANOVA (F-tests) Results Relating to Income

Factor	Qualification	No. of Respondents	Mean	F	Sig.
Internet Experience	Low	114	4.158	5.309	0.005**
	Middle	280	4.667		
	High	66	4.547		
Perceived Security	Low	114	3.297	3.608	0.028**
	Middle	280	3.707		
	High	66	3.631		
Web Design/Feature	Low	114	4.155	3.530	0.030**
	Middle	280	4.512		
	High	66	4.426		
Reliability	Low	114	3.607	4.996	0.007**
	Middle	280	4.066		
	High	66	3.788		
Internet Prestige	Low	114	4.382	3.645	0.027**
	Middle	280	3.857		
	High	66	4.364		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.27: ANOVA (F-tests) Results Relating to Time of Computer Using

Factor	Qualification	No. of Respondents	Mean	F	Sig.
Internet Skill	Short Time	376	4.767	2.831	0.093*
	Long Time	84	5.052		
Reliability	Short Time	376	3.859	3.250	0.072*
	Long Time	84	4.155		
Internet Prestige	Short Time	376	4.153	4.412	0.036**
	Long Time	84	3.643		

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.28: Scheffe Output for Age (Multiple Comparisons)

			Internet Experience	Perceived Security	Web Design/Feature	Internet Skill	Reliability	Internet Prestige
Scheff	**(I) Age**	**(J) Age**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	Young-age	Middle-Age	0.043**	0.021**	0.167	0.007**	0.277	0.062*
		Old-Age	0.001**	0.029**	0.064*	0.003**	0.002**	0.081*
	Middle-Age	Young-age	0.043**	0.021**	0.167	0.007**	0.277	0.062*
		Old-Age	0.169	0.819	0.660	0.559	0.091*	0.869
	Old-Age	Young-age	0.001**	0.029**	0.064*	0.003**	0.002**	0.081*
		Middle -Age	0.169	0.819	0.660	0.559	0.091*	0.869

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.29: Scheffe Output for Married Status

			Perceived Security	Internet Skill	Internet Prestige
Scheff	**(I) Married Status**	**(J)Married Status**	**Sig.**	**Sig.**	**Sig.**
	Single	Married	0.069*	0.094*	0.044**
		Divorce and Widowed	0.839	0.201	0.640
	Married	Single	0.069*	0.094*	0.044**
		Divorce and Widowed	0.967	0.606	1.000
	Divorce and Widowed	Single	0.839	0.201	0.640
		Married	0.967	0.606	1.000

**significance at the 0.05 level.
*significance at the 0.10 level.

Table5.30: Scheffe Output for Education (Multiple Comparisons)

			Internet Experience	Perceived Security	Web Design/Feature	Internet Skill	Marketing Exposure	Internet Prestige
Scheff	**(I) Education**	**(J) Education**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	Low-Education	Middle-Education	0.040**	0.997	0.825	0.964	0.447	0.147
		High-Education	0.001**	0.395	0.089*	0.158	0.999	0.000**
	Middle-Education	Low-Education	0.040**	0.997	0.825	0.964	0.447	0.147
		High-Education	0.039**	0.009**	0.003**	0.002**	0.025**	0.000**
	High-Education	Low-Education	0.001**	0.395	0.089*	0.158	0.999	0.000**
		Middle -Education	0.039**	0.009**	0.003**	0.002**	0.025**	0.000**

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.31: Scheffe Output for Occupation (Multiple Comparisons)

			Perceived Security	Web Design/Feature	Internet Skill	Marketing Exposure
Scheff	**(I) Education**	**(J) Education**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	Professional Trade Person	Student	0.997	0.943	1.000	1.000
		Civil Servant	0.978	0.996	1.000	0.878
		Labor and Famer	0.007**	0.001**	0.095*	0.004**
		Sales	0.085*	0.202	0.952	0.259
		Unemployed, Homemaker, Retired and Others	0.942	0.505	0.257	0.993
	Student	Professional and Trade Person	0.997	0.943	1.000	1.000
		Civil Servant	1.000	0.994	1.000	0.958
		Labor and Famer	0.044**	0.047	0.112	0.012**
		Sales	0.341	0.861	0.960	0.427
		Unemployed, Homemaker, Retired and Others	0.999	0.997	0.290	0.999
	Civil Servant	Professional and Trade Person	0.978	0.996	1.000	0.878
		Student	1.000	0.994	1.000	0.958
		Labor and Famer	0.018**	0.001**	0.026	0.035**
		Sales	0.196	0.269	0.841	0.808
		Unemployed, Homemaker, Retired and Others	1.000	0.672	0.087	0.997

(Continued)

			Perceived Security	Web Design/Feature	Internet Skill	Marketing Exposure
Scheff	**(I) Education**	**(J) Education**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	Labor and Famer	Professional and Trade Person	0.007**	0.001**	0.095*	0.004**
		Student	0.044**	0.047**	0.112	0.012**
		Civil Servant	0.018**	0.001**	0.026**	0.035**
		Sales	0.778	0.290	0.322	0.405
		Unemployed, Homemaker, Retired and Others	0.096*	0.218	0.989	0.024**
	Sales	Professional and Trade Person	0.085*	0.202	0.952	0.259
		Student	0.341	0.861	0.960	0.427
		Civil Servant	0.196	0.296	0.841	0.808
		Labor and Famer	0.778	0.290	0.322	0.405
		Unemployed, Homemaker, Retired and Others	0.572	0.999	0.662	0.632
	Unemployed, Homemaker, Retired and Others	Professional and Trade Person	0.942	0.505	0.257	0.993
		Student	0.999	0.977	0.290	0.999
		Civil Servant	1.000	0.672	0.087*	0.997
		Labor and Famer	0.096*	0.218	0.989	0.024**
		Sales	0.572	0.999	0.662	0.632

**significance at the 0.05 level.
*significance at the 0.10 level.

Table 5.32: Scheffe Output for Income (Multiple Comparisons)

			Internet Experience	Perceived Security	Web Design/Feature	Reliability	Internet Prestige
Scheff	**(I) Income**	**(J) Income**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	Low-Income	Middle-Income	0.005**	0.029**	0.030**	0.010**	0.064*
		High-Income	0.203	0.295	0.350	0.689	0.998
	Middle-Income	Low-Income	0.005**	0.029**	0.030**	0.010**	0.064*
		High-Income	0.826	0.922	0.876	0.323	0.184
	High-Income	Low-Income	0.203	0.295	0.350	0.689	0.998
		Middle-Income	0.826	0.922	0.0876	0.323	0.184

**significance at the 0.05 level.
*significance at the 0.10 level.

Appendix 1: Cover Letter

Commerce Division
P O Box 84
Lincoln University
Canterbury
New Zealand
Telephone:
(64)(3) 325 281

Dear Sir/Madam

You are invited to participate in a survey that constitutes part of my Master of Commerce and Management thesis at Lincoln University, New Zealand. The survey is about factors that affect consumers' adoption of Internet banking in China. The information you provide will be published in aggregate form only, in my thesis and in any resulting academic publications or conferences.

You are invited to participate in this research. This survey will take approximately 10-15 minutes to complete. If you are 18 years or older, I would be grateful if you would take few minutes to complete the questionnaire and return it to me once you have finished. This research is completely voluntary in nature and you are free to decide not to participate at any time during the process of completing the questionnaire. Nevertheless, your assistance will greatly help me with my study. However, if you complete the questionnaire and return it to the researcher, it will be understood that you are 18 years of age or older and have consented to participate in this survey. The aggregate information should be of benefit to retail banks and their customers, and to academics in the financial marketing/management areas.

Complete anonymity is assured in this survey, as the questionnaire is anonymous. No questions are asked which would identify you as an individual. All responses will be aggregated for analysis only, and no personal details will be reported in the thesis or any resulting publications as the questionnaire does not require your name or any contact details.

If you have any questions about this survey, please contact me on (03) 3253838 (ext 8972), or by email at zhenglu_fz@hotmail.com. You can also contact my supervisors Michael D. Clemes and Dr. Christopher Gan. Mr. Clemes can be contacted at (03) 3252811 (ext 8292) or Mike.Clemes@lincoln.ac.nz and Dr. Gan can be contacted at (03) 3252811 (ext 8155) or Christopher.Gan@lincoln.ac.nz.

This project has approved by Lincoln University Human Ethics Committee. Thank you for your kind co-operation and assistance.

Yours Sincerely

Lu (Nancy) Zheng
Master Student of Commerce and Management

Research Supervisors:

Dr Christopher Gan	Mr Mike Clemes
Associate Professor, Economics	Senior Lecturer Marketing
Commerce Division	Commerce Division

Appendix 2: Questionnaire

An Empirical Analysis of Factors that Influence the Adoption of Internet Banking in China

Instructions

This survey assesses consumers' adoption of Internet banking services. There are four sections in this survey. Please complete Section 1, Section 4, and either Section 2 or 3 as per the instructions. Only summary measures and conclusions from this survey will be reported. Your participation is voluntary and all of your answers will be kept confidential.

Section 1 : General Banking Information

Please circle your answers

	Questions	**Answers** **Code**
1.	Which financial institution do you bank with?	(1) Bank of China (2) China Construction Bank (3) Bank of Communication (4) Agricultural Bank of China (5) Industrial and Commercial Bank of China
2.	What is the main banking method for your banking services?	(1) ATM (2) Visiting bank's branch (3) Telephone (4) Other(s) please specify _____
3.	How frequently do you use telephone banking services each month (for example, balance inquiry, fund transfer between accounts)?	(1) Less than 1 time (2) 1 to 3 times (3) 4 to 8 times (4) 9 to 12 times (5) Over 12 times
4.	How frequently do you use an Automated Teller Machine (ATM) each month?	(1) Less than 1 time (2) 1 to 3 times (3) 4 to 8 times (4) 9 to 12 times (5) Over 12 times
5.	How frequently do you visit your bank branch each month?	(1) Less than 1 time (2) 1 to 3 times (3) 4 to 8 times (4) 9 to 12 times (1) Over 12 times
6.	What is the main reason that you typically visit your bank branch (please choose the single most important reason)?	(1) To make a deposit (2) To get advice for investment options (3) To inquire about a balance (4) To withdraw cash (5) To obtain general banking information
7.	Does your bank offer Internet banking services?	(1) Yes (2) No
8.	Do you use Internet banking?	(1) Yes → Please go to **Section Two** (2) No → Please go to **Section Three**

Section 2 : Adoption of Internet Banking

Please circle your answers

	Questions	Answers	Code
1.	How often do you use Internet Banking?	(1) Daily (2) Weekly (3) Twice each month (4) Monthly (5) Other, please specify _____	
2.	What banking services do you use that your Internet bank offers?	(1) Seeking product and rate information (2) Calculate loan payment information (3) Download loan applications (4) Download personal bank transaction activities (5) Check balances on-line (6) Apply for consumer loans or credit cards online (7) Inter-account transfers (8) On-line bill payments (9) Other(s) please specify_____	
3.	What is/are the main benefit(s) for using internet banking?	(1) Convenience (2) Lower fees (3) Time saving (4) Other(s) please specify_____	
4.	How much of your time have you saved compared to traditional banking?	(1) 10% (4) 40% (2) 20% (5) Above 50% (3) 30%	
5.	What is/are the problem(s) you have encountered when using internet banking?	(1) Cannot log in (2) Complicated websites (3) Fake websites (4) Transaction fraud (5)Constant breakdown (6) Other(s) please specify_____	
6.	What was the single most important reason that you choose a particular bank as your Internet bank? (Please choose one)	(1) I have a traditional bank account with the same bank (2) The brand name of the bank (3) The excellent service offered by the bank (4) My company is with the bank (5) Other(s) please specify _____	
7.	In addition to your Internet bank account, do you also have a traditional bank account?	(1) Yes (2) No	
8.	Please indicate the type of connection you are using to connect to the internet	(1) Dial up Modem (2) DSL (3) Satellite (4) Broadband (5) Other(s) please specify _____	
9.	What is your most regular location when you access the internet?	(1) Home (2) Work (3) School (4) Internet café (5) Friend's place (6) Other(s) please specify _____	

		RANK
10.	What are the most important reasons you opened an Internet bank account? Please rank the following list in the order of their importance on a scale of 1 to 10: 1 = the most important and 10 = the least important.	_____ Internet skills _____ Development of electronic banking _____ Internet experience _____ Marketing exposure _____ Security of transactions _____ Reliability _____ Quick service _____ Variety of services (bill payment, account reconciliation, order checks _____ Type of Internet connection _____ Web design/features

This section is about your thoughts and current practices regarding the adoption of Internet banking Please CIRCLE how strongly you agree or disagree with each of the following statements on a scale of 1 to 7. **1 you strongly disagree, 7 you strongly agree, 4 is neutral.**

		Strongly Disagree		Neutral				Strongly Agree
1	Using Internet banking services gives me higher status among my peers.	1	2	3	4	5	6	7
2	Using internet banking services gives me more prestige among my peers.	1	2	3	4	5	6	7
3	I trust the ability of Internet banking to protect my privacy.	1	2	3	4	5	6	7
4	In the event that an error occurred during my online banking session, I am confident that the bank will be able to rectify the error and no erroneous transaction will be made.	1	2	3	4	5	6	7
5	I am confident of using Internet banking to perform transactions online.	1	2	3	4	5	6	7
6	I feel a sense of personal ownership about the use of Internet banking.	1	2	3	4	5	6	7
7	Internet banking will replace conventional banking one day.	1	2	3	4	5	6	7
8	I will strongly recommend others to use Internet banking.	1	2	3	4	5	6	7
9	Using Internet banking services enables me to accomplish banking activities more quickly.	1	2	3	4	5	6	7
10	Using Internet banking services improves my performance of utilizing.	1	2	3	4	5	6	7
11	Using Internet banking services allows me to accomplish more banking activities than would otherwise be possible.	1	2	3	4	5	6	7
12	Using Internet banking services gives me greater control over financial banking activities.	1	2	3	4	5	6	7
13	Using Internet banking enables me to organise banking tasks.	1	2	3	4	5	6	7
14	Using Internet banking increases my free time.	1	2	3	4	5	6	7

		Strongly Disagree		Neutral				Strongly Agree
15	Using Internet banking makes it easier to pay my bills.	1	2	3	4	5	6	7
16	When it comes to performing transactions such as transfer funds, I prefer to do internet banking rather then conventional banking.	1	2	3	4	5	6	7
17	If transaction involves a huge amount of money, I still prefer to do the internet banking instead.	1	2	3	4	5	6	7
18	Using Internet banking requires little mental effort.	1	2	3	4	5	6	7
19	Using Internet banking services can be fun.	1	2	3	4	5	6	7
20	My interaction with Internet banking is clear and understandable.	1	2	3	4	5	6	7
21	Internet banking is an easy way to conduct a banking transaction.	1	2	3	4	5	6	7
22	Learning to operate Internet banking is easy for me.	1	2	3	4	5	6	7
23	I find Internet banking is flexible to interact with.	1	2	3	4	5	6	7
24	I find it easy to get Internet banking to do what I want to do.	1	2	3	4	5	6	7
25	The current security measures taken by banks to protect Internet banking are sufficient.	1	2	3	4	5	6	7
26	I am confident with the security aspects of internet banking.	1	2	3	4	5	6	7
27	Internet banking is just as secure as conventional banking.	1	2	3	4	5	6	7
28	The bank provides secure communication to ensure all payment transactions between the clients and the banks are safe.	1	2	3	4	5	6	7
29	The bank provides the latest encryption technology to prevent unauthorized intrusion.	1	2	3	4	5	6	7
30	I feel safe when I release credit card information to the bank.	1	2	3	4	5	6	7
31	The bank updates its anti virus software periodically to safeguard my data.	1	2	3	4	5	6	7
32	In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money.	1	2	3	4	5	6	7
33	After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my confidence in Internet banking has not been affected negatively.	1	2	3	4	5	6	7
34	Other people cannot tamper with information concerning my Internet banking transactions.	1	2	3	4	5	6	7
35	Other people have no way in knowing about my internet banking activities.	1	2	3	4	5	6	7
36	I am very skilled at using the internet.	1	2	3	4	5	6	7
37	I consider myself knowledgably about good search techniques on the internet.	1	2	3	4	5	6	7
38	I know more about using the internet than most users.	1	2	3	4	5	6	7

		Strongly Disagree		Neutral				Strongly Agree
39	I know how to find what I want on the internet using a search engine.	1	2	3	4	5	6	7
40	I am interested to hear about new technological developments.	1	2	3	4	5	6	7
41	Technological developments have enhanced our lives.	1	2	3	4	5	6	7
42	I feel comfortable in changing and using online banking services for my financial activities.	1	2	3	4	5	6	7
43	I like the look and feel of the internet banking website.	1	2	3	4	5	6	7
44	Information displayed on the screen is clear, well organised, unambiguous and easy to read.	1	2	3	4	5	6	7
45	The website offers me enough information to answer my questions.	1	2	3	4	5	6	7
46	The website offers information in more than one language.	1	2	3	4	5	6	7
47	The positioning of information on the website allows me to navigate effortlessly through the site.	1	2	3	4	5	6	7
48	The links within the website allow me to move easily back and forth between sections of the website.	1	2	3	4	5	6	7
49	The internet banking website contains large fonts that are readable.	1	2	3	4	5	6	7
50	The search function within the site enables me to find the information I need.	1	2	3	4	5	6	7
51	The website updates information regularly.	1	2	3	4	5	6	7
52	Internet banking websites contain friendly terms.	1	2	3	4	5	6	7
53	Internet banking has been widely advertised and promoted in local media such newspaper, magazines and TV	1	2	3	4	5	6	7
54	My main bank advertises and promotes Internet banking frequently	1	2	3	4	5	6	7
55	My bank uses its web site to promote its services	1	2	3	4	5	6	7
56	My bank encourages me to use its web site	1	2	3	4	5	6	7

Section 3 : Non-adoption of Internet Banking

This section is about your thoughts and current practices regarding the non-adoption of Internet banking Please CIRCLE how strongly you agree or disagree with each of the following statements on a scale of 1 to 7. 1 you strongly disagree, 7 you strongly agree, 4 is neutral.

		Strongly Disagree		Neutral				Strongly Agree
1	Using Internet banking services gives me lower status among my peers.	1	2	3	4	5	6	7
2	Using internet banking services gives me less prestige among my peers.	1	2	3	4	5	6	7
3	I do not trust the ability of Internet banking to protect my privacy.	1	2	3	4	5	6	7
4	In the event that an error occurred during my online banking session, I am NOT confident that the bank will be able to rectify the error and erroneous transaction will be made.	1	2	3	4	5	6	7
5	I am not confident in using Internet banking to perform transactions online.	1	2	3	4	5	6	7
6	I do not feel a sense of personal ownership about the use of Internet banking.	1	2	3	4	5	6	7
7	Internet banking will not replace conventional banking one day.	1	2	3	4	5	6	7
8	I will not recommend others to use Internet banking.	1	2	3	4	5	6	7
9	Using Internet banking services does not enable me to accomplish banking activities more quickly.	1	2	3	4	5	6	7
10	Using Internet banking services does not improve my performance of utilizing.	1	2	3	4	5	6	7
11	Using Internet banking services does not allow me to accomplish more banking activities than would otherwise be possible.	1	2	3	4	5	6	7
12	Using Internet banking services does not give me greater control over financial banking activities.	1	2	3	4	5	6	7
13	Using Internet banking does not enable me to organise my banking tasks.	1	2	3	4	5	6	7
14	Using Internet banking decreases my free time.	1	2	3	4	5	6	7
15	Using Internet banking makes it difficult to pay my bills.	1	2	3	4	5	6	7
16	When it comes to performing transactions such as transfer funds, I prefer to do conventional banking rather then internet banking.	1	2	3	4	5	6	7
17	If a transaction involves a huge amount of money, I will prefer to do conventional banking instead of internet banking.	1	2	3	4	5	6	7
18	Using Internet banking requires a lot of mental effort.	1	2	3	4	5	6	7
19	Using Internet banking services can be frustrating.	1	2	3	4	5	6	7
20	My interaction with Internet banking unclear and difficult to understand.	1	2	3	4	5	6	7
21	Internet banking is a difficult way to conduct a banking transaction.	1	2	3	4	5	6	7

		Strongly Disagree		Neutral				Strongly Agree
22	Learning to operate Internet banking is difficult for me.	1	2	3	4	5	6	7
23	I find Internet banking is inflexible to interact with.	1	2	3	4	5	6	7
24	I find it difficult to get Internet banking to do what I want to do.	1	2	3	4	5	6	7
25	The current security measures taken by banks to protect Internet banking are insufficient.	1	2	3	4	5	6	7
26	I am not confident with the security aspects of internet banking.	1	2	3	4	5	6	7
27	Internet banking is not as secure as conventional banking.	1	2	3	4	5	6	7
28	The bank does not provide secure communication to ensure all payment transactions between the clients and the banks are safe.	1	2	3	4	5	6	7
29	The bank does not provide the latest encryption technology to prevent unauthorized intrusion.	1	2	3	4	5	6	7
30	I feel unsafe when I release credit card information to the bank.	1	2	3	4	5	6	7
31	The bank does not update its antivirus software periodically to safeguard my data.	1	2	3	4	5	6	7
32	In the event that my online bank account has been hacked into and my money stolen, I am not confident that the bank will help me to recover my money.	1	2	3	4	5	6	7
33	After hearing or reading about news regarding Internet banking activity, such as fake websites and banking frauds, my confidence in Internet banking has been affected negatively.	1	2	3	4	5	6	7
34	Other people might tamper with information concerning my internet banking transactions.	1	2	3	4	5	6	7
35	Other people might know about my internet banking activities.	1	2	3	4	5	6	7
36	I am not skilled at using the internet.	1	2	3	4	5	6	7
37	I consider myself not knowledgeable about good search techniques on the internet.	1	2	3	4	5	6	7
38	I know less about using the internet than most users.	1	2	3	4	5	6	7
39	I do not know how to find what I want on the internet using a search engine.	1	2	3	4	5	6	7
40	I am not interested to hear about new technological developments.	1	2	3	4	5	6	7
41	Technological developments have not enhanced our lives.	1	2	3	4	5	6	7
42	I feel uncomfortable in changing and using online banking services for my financial activities.	1	2	3	4	5	6	7
43	I do not like the look and feel of the internet banking website.	1	2	3	4	5	6	7
44	Information displayed on the screen is unclear, unorganised, ambiguous, and not easy to read.	1	2	3	4	5	6	7

		Strongly Disagree		Neutral				Strongly Agree
45	The website offers me inadequate information to answer my questions.	1	2	3	4	5	6	7
46	The website does not offer information in more than one language.	1	2	3	4	5	6	7
47	The positioning of information on the website does not allow me to navigate effortlessly through the site.	1	2	3	4	5	6	7
48	The links within the website does not allow me to move easily back and forth between sections of the website.	1	2	3	4	5	6	7
49	The internet banking website contains small fonts that are unreadable.	1	2	3	4	5	6	7
50	The search function within the site does not enable me to find the information I need.	1	2	3	4	5	6	7
51	The website does not update information regularly.	1	2	3	4	5	6	7
52	Internet banking websites contain confusing terms.	1	2	3	4	5	6	7
53	Internet banking has not been widely advertised and promoted in local media such newspaper, magazines and TV	1	2	3	4	5	6	7
54	My main bank does not advertises and promotes Internet banking frequently	1	2	3	4	5	6	7
55	My bank does not use its web site to promote its services	1	2	3	4	5	6	7
56	My bank does not encourage me to use its web site	1	2	3	4	5	6	7

	Questions	**Answers** **Code**
57	If you are not using the Internet banking services, would you use Internet services if they were provided by your bank?	(1) Very unlikely (2) Unlikely (3) Somewhat Unlikely (4) Somewhat Likely (5) Likely (6) Very Likely
58	How likely is it that you will be opening an Internet bank account within the next twelve months?	(1) Likely (2) Unlikely
		RANK
59	If you were going to open an Internet banking account, how important are the following factors on a scale of 1 to 10, where 1 = most important, 10 = least important t.	_____ Internet skills _____ Development of electronic banking _____ Internet experience _____ Marketing exposure _____ Security of transactions _____ Reliability _____ Quick service _____ Variety of services (bill payment, account reconciliation, order checks _____ Type of Internet connection _____ Web design/features

Section 4 : Demographics

1. What is your gender?	(1) Male (2) Female
2. What is your age group?	(1) 18-25 years old (2) 26-35 years old (3) 36-45 years old (4) 46-60 years old (5) Over 61 years old
3. What is your marital status?	(1) Single/Never Married (2) Married (3) Divorced/Separated (4) Widowed
4. Which is the highest level of education you have completed?	(1) Primary school or lower (2) Middle school (3) High school (4) Two years college (5) Bachelor degree (6) Postgraduate degree (7) Other(s) please specify_____
5. What is your occupation?	(1) Professional (2) Tradesperson (3) Student (4) Civil Servant (5) Labourer (6) Farmer (7) Unemployed (8) Sales/Service (9) Home Maker (10) Retired (11) Other(s) please specify_____
6. What is your personal monthly income before tax? (Chinese RMB in the last month)	(1) 400RMB (2) 401 to 1000RMB (3) 1001 to 1500RMB (4) 1501 to 2000 RMB (5) 2001 to 3000RMB (6) 3001 to 5000RMB (7) Above 5001RMB (8) Other(s) please specify_____
7. How long have you been using a computer at home?	(1) Less than one year (2) 1 - 5 years (3) 6 - 10 years (4) 11 - 15 years (5) 16 - 20 years (6) More than 20 years (7) I do not have a computer at home

Thank you for completing this questionnaire