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Master

Assessing E-commerce in the Commercial Banks in Nam Dinh, Viet Nam – Adopting TAM Model

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Assessing E-commerce in the Commercial Banks in Nam Dinh, Viet Nam – Adopting TAM Model

Student: Dang Van Kim

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ABSTRACT

As Vietnam is booming and the society is opening up, E-commerce has been putting its first footstep in this rising economy. The past decade has seen Internet and E-commerce starting to positively tune into Vietnamese daily life. However, to really give the economy an upsurge, it is essential that the banking sector be reformed toward an E-age. E-banking could be the next step to do for the economy to really transform and productivity boosted. Like any other emerging economy, Vietnam has motivators and hindrance for such a platform to be implemented widely. In this research, we seek to find out what factors influences Banks' choice to adopt E-banking in Nam Dinh province. The research follows the Technology Acceptance Model (TAM). The research findings show that the perception of usefulness is the most important factor that determines whether or not banks would adopt E-banking. Following perceived usefulness, perceived ease of use would also positively influence banks' decision in further involvement with a new technology. These findings have induced numerous implications for policy makers, management and software developers.

Keywords: E-banking, Online banking, TAM model, Vietnam, Perceived usefulness, Perceived ease of use

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Chapter 1 Introduction

1.1 Research Background

With the introduction of Internet in early 90s, the past few decades have seen the world's economy enjoy a powerful push forward. At one level, the advent of Internet has significantly altered the way people conduct transactions. According to Martin Kenney, the Internet has necessarily created a "New Economic Space" or the so-called E-commerce where transaction costs are marginalized and efficiency is enhanced (Martin Kenney, 2000).

E-commerce has arguably promoted productivity in industrialized countries. Multiple literature on E-commerce and productivity prove that there is a positive relationship between firms' productivity and its level of ICT introduction and buying and selling activities (Clayton and Waldron, 2003), (Atrostic B K and Nguyen S, 2002).

In the early years of the 21st century, E-commerce has spread to developing countries. The birth and growth of E-commerce in these developing economies is an inevitable trend in the process of globalization and digitization. Since its entrance into developing countries, the notion of E-commerce has evolved a great deal; its interactive nature has given rise to various forms of collaborations at both business and personal levels.

Among others, E-banking, or Internet banking, is emerging as one of the prominent e-commerce trends in fast developing economies. Vietnam is not left out of this global trend. Especially, the rising finance sector in Vietnam, with its increasing

pressure to mature, is requiring a big digital boost to fulfill its potential.

The introduction of on-line banking services in Vietnam in the past two years has received enthusiastic responses. Ever since the State Bank of Vietnam initiated Inter-Bank Electronic Payment, the speed of electronic payment has been remarkably improved. In 2005, to total number of electronic banking transactions was 3.5 million. In 2006, this number increased to 6.3 million. According to Techcombank, its online banking has attracted 1,000 accounts just two weeks after launching the service. One third of the account have the balance of 50 million dong or higher (InfoTV, 2009), (Saigontimes, 2008).

Further studies show that up to 63% of businesses believe that revenue from orders using electronic instruments will continue to increase (Ministry of Trade, 2007). A similar study on over 2000 businesses by Ministry of Industry and Trade in 2009 shows that almost 100% of surveyed enterprises have applied e-commerce applications to some extent, with an average 33% of revenues being through digital orders, while implementation costs account for only 5% of business costs (Ministry of Trade, 2009).

Going electronic is not an option for Vietnam's banks any more. In 2005, only 7 banks adopted Core Banking (Saigontimes, 2008). In 2008, this figure has grown to 44 banks. With 21 million of the population having access to the Internet and close to 70 percent of the population using mobile phones, most banks now feel the urge to join this digitalization rush to create a competitive edge in an ever more competitive

business environment.

1.2 Research Motive

A bank's commercial success depends to a large extent on its ability to identify services that are in demand, and provide those services with quality and competitive prices. This requires vigorous renovation and application of technologies to cope with increasing demand and competition.

Experience from developed countries show that demand for banking services will increase following economic development, and revenue and profit from this business line will become a major part of banks' operations. In this light, going electronic has proved the way to go to boost effective banking services worldwide and Vietnam apparently cannot stay out of this trend. The answer to what determines smooth adoption of E-banking, however, varies from countries to countries. From the point of view of a policy maker, it is crucial to understand the determinants of E-banking implementation given Vietnam's infrastructure and cultural context. This is a motivation for this research to look at ways to develop E-commerce applications for Vietnamese banks. Having insights into the role, and especially the order of importance, of determinants of E-banking adoption is key for policy makers to adjust their policies toward E-banking. Controlling these determinants would definitely help policy makers learn how to influence the behaviors of banks' management in a positive way, thus, accelerate the adoption process.

It is also vital to learn what banks' management perceive as the most feasible E-banking applications at this point. This knowledge basically is a core-competency assessment to help us predict the direction of E-banking in Vietnam in the near future and possibly in the long run. It also reveals banks' current technology competence, and their current perception of E-banking service demand among customers, which is also a useful insight in designing well-suited and timely policies.

To address this question, the world's scholarship have focused on using the Model of Technology Acceptance (TAM) as a framework to benchmark all discussions on what determines the level of acceptance of E-banking across organizations, sectors, and countries. The Model of Technology Acceptance was initially developed by Fred Davis in 1989, which explores the relationship between perceived usefulness, perceived ease of use and Actual usage in technology applications.

Perceived Ease of Use: The degree to which a person believe that using a particular system would enhance his or her job performance (Davis, 1989).

Perceived Usefulness: The degree to which a person believe that using a particular system would enhance his or her job performance (Davis, 1989).

Various attempts have been made to extend this model to further investigate determinants of technology adoption. In this paper, I would utilize this basic framework to study the dynamics of E-banking adoption among banks in Vietnam.

1.3 Research Purpose

Based on the above background, current knowledge and current state of e-business application in Vietnam's banking industry, we propose the following research questions:

RQ1. How does Perceived Ease of use influence Perceived Usefulness?

RQ2: How does Perceived Ease of Use and Perceived Usefulness influence banks' attitude toward E-banking?

RQ3: How does Perceived Usefulness and Banks' attitude toward E-banking influence Bank's intention to use E-banking?

1.4 Research Procedure

In this paper, we would seek to answer the above research questions through a quantitative survey. The chart below describes how we go through the research processes. As we nail down the research questions, we would go investigate extensive all related literature to narrow down the scope of our researches and to conceptualize what other factors we would like to know beyond all the research results that previous studies have given. Literature review also serves as benchmark for us to compare our findings later on in the research and determine if our results follow or differ from previous answers.

Based on what we learned from literature review, the next step would be to come up with hypotheses and corresponding questionnaires. It follows that we would determine the sample size of our survey and how we would conduct interviews. This is

a crucial part of the research process because it determines how accurate our findings would be. Since the main methodology of this exploratory research is in-depth interviews, we understand that the attitude and questions of the interviewers might to some extent influences answers. We therefore pay special attention to this process by testing the questionnaires several times until a final accurate and objective version is reached.

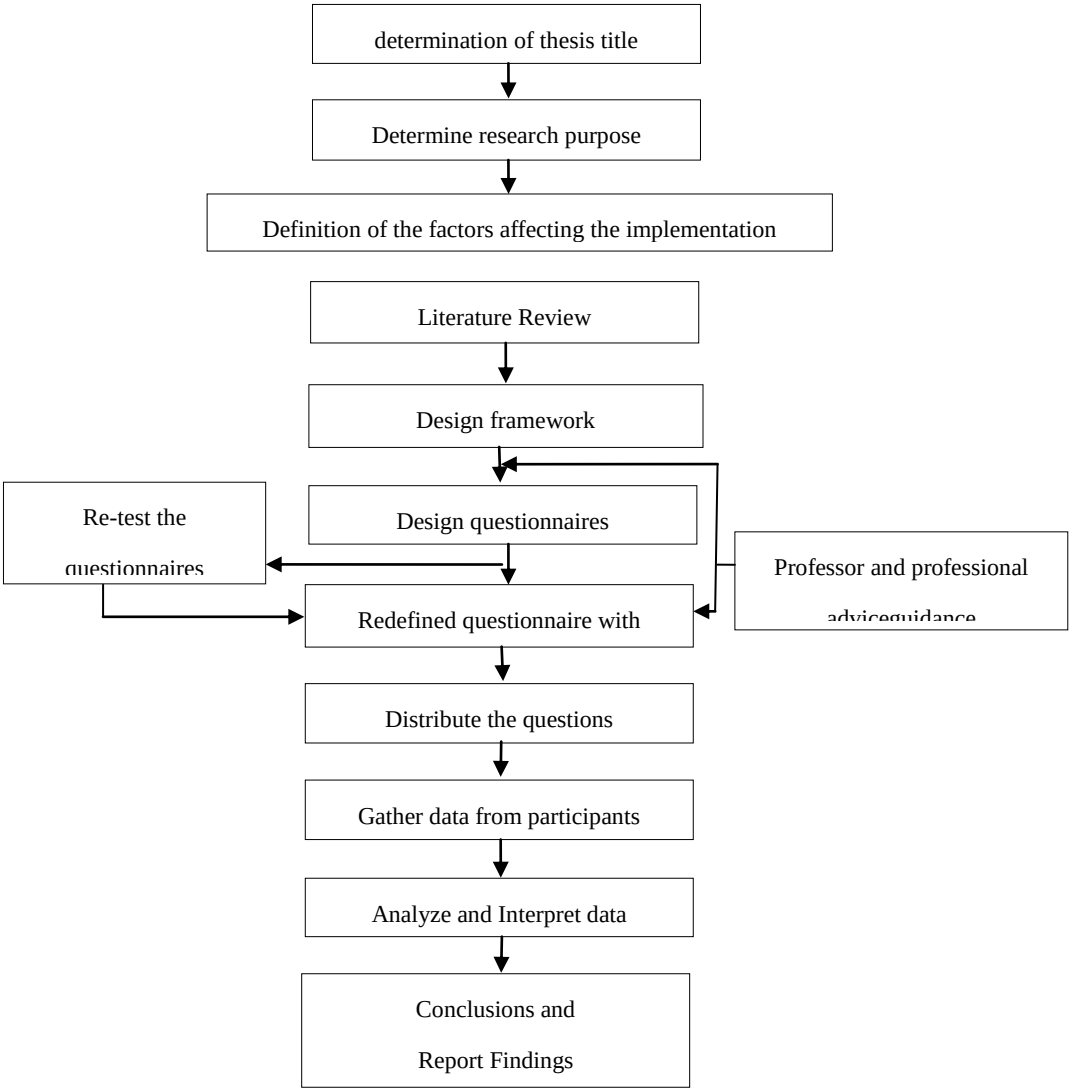

Figure 1. Research Procedure

The most important part of any survey would actually be the field work, where we distribute the questionnaires, conduct interviews to obtain relevant data. The reason why this is one of the most important phase in a survey because its quality would immensely effect the final conclusions. Any misalignment between the original research design and the way we conduct interviews would result in missing data or skewed results. It is therefore highly important that we supervise this process carefully to make sure there is consistency between the research plan and actual execution.

After all corresponding data is gathered and screened out, the next step would be interpret data in either qualitative or quantitative approach. This would help us arrive at final conclusion about the accuracy of our prior assumptions and hypotheses.

Chapter 2 Literature Review

2.1 What is E-commerce for banking?

Electronic banking is not a recently developed concept. As early as the 1960s, in the search for cost-effective approaches in dealing with a sophisticated, multi-branch system, many banks brought electronically – based payment system into operations (Tahir Masood Qureshi, PhD, 2008). Electronic Funds Transfer (EFT) services have been used in international money transfer for a long time. However, without the Internet's ability to connect systems with speed and accuracy, most of these applications remained Internal with limited usage.

The advent of Internet, followed by the emergence of E-commerce, came as the drivers for electronic banking revival. In the past decade, the term E-commerce has become the way to go in the business world. Unsurprisingly, the banking sector, which is considered the blood vessels of economies, cannot resist this ongoing trend. While the term E-commerce has almost become a jargon, it is, however, essential to understand what E-commerce implies for the future of banking and finance and how the term E-banking has now differ from its very early definition.

So, what is E-banking? The answer varies across researches. According to Daniel, Mols and Sathye, E-banking is the supply of a variety of services, which allow customer to have access to information and conduct retail banking services via computers, television or mobile phones (Lavin Aghaunor, 2006). Burr, 1996, on the other hand, defined E-banking in a more interactive manner compared to Daniel, Mols

and Sathye's customer-centric approach. He describes E-banking as "an electronic connection between banks and customers" to manage and control financial transactions. In several contexts, E-banking can be understood as banking on a variety of platforms, such as: Internet banking, Telephone banking or mobile banking, PC banking, or even Automatic Teller Machine (ATM) banking.

How we understand the concept of E-banking has an important implication for strategies and policies. Some managers only consider E-banking as an e-channel to speed up current transactions. Yet, E-banking could also entail the concept of Virtual bank, operating without human presence, which is far from the traditional brick and mortar institutions we have been so accustomed to (Yahya Dauda, Mphil, 2007). Virtual bank is a radical idea that could become an essential tool for banks' strategic market segmentation (Yahya Dauda, Mphil, 2007). This multi-dimensional nature of E-banking is exciting in the sense that it would provide new opportunities and challenges for banks that choose embrace such new ideas.

2.2 The evolution of E-banking in the world.

The very first milestone for E-banking may be traced back half a century ago. Back in the 1960s, the trend of employers paying wages and salary directly to their employees' bank accounts inspired the development of an electronic based payment system (Tahir Masood Qureshi, PhD, 2008).. Basic software's and private networks ensued as the initial efforts to digitalize their system. An example of such early electronic effort is the Inter Organization System (IOS). IOS ranged from closed

systems, such as banks' corporate cash management system to more sophisticated intra-industry systems (Andreas Crede, Science Policy Unite Research, University of Sussex).

In the 1970s, the introduction of Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT) allowed banks to send documents and invoices electronically in a secured and seamless way. EDI could be consider a mature form of IOS with distinguished improvements such as its open standardization format that results in a higher level of compatibility with systems of different standards (Andreas Crede, Science Policy Unite Research, University of Sussex).

It is with the birth of the two technologies that the idea of an inter-organization communication protocol has been realized, though in primitive form.

The 1980s saw technology propelling the banking industry even further. Credit cards, Automated Teller Machine (ATM) and telephone banking were the products that gave E-banking a new dimension (Daniel, E. , 1999). Before, the concept of E-banking merely rested at the ability of banks to communicate internally and between each other at a faster speed. The arrival of the three mentioned products and their underlying technologies definitely gave made banks and their money more accessible to the vast of population. These innovations, undeniably, has increased the velocity and circulation of money since people could access to their resources and the bank resources and perform transactions through multiple means and at different times. The concept of E-banking was extended immensely with these revolutions.

It is, however, the 90s, with the proliferation of Internet applications that really gave banking industry a quantum leapt (Daniel, E. , 1999). Internet leveraged on all prior efforts in cross-bank interchange; it also performs these protocols at an incredible speed. The story of increased velocity of money and growth is once again retold, with much more enthusiasm. The 1990s also saw many merger and acquisitions between banks, which significantly increased banks' scale and sophistication in operations. E-banking naturally became an instrumental means to keep up with these positive dynamics.

The Internet with enhanced security for on-line transactions made on-line banking or Internet banking become the core of E-banking. The profusion of online and mobile population laid highly flexible and scalable platform for E-banking that brick-and – mortar banks can no longer ignore. Never before has it been easier for banks to reach a large pool of customers with redundant costs. Online banking has also shifted toward more involvement from customers in each transaction and less presence of traditional bankers. Further developments in technology such as encryption and virtual signatures laid premise for special e-commerce products in banking such as electronic billing, issuing electronic money and electronic checks.

In terms of scope, E-banking is an extremely resourceful tool for facilitating Business to Business E-commerce. E-banking played a crucial role in automatically managing corporate cash management. Evidence of such services is firms' ability to perform E-procurement these days thanks to banks' E-payment platforms (Olga Lustik,

2004). E-banking is also extending its reach to more non-traditional digital phenomenon such as prominent Social Networking Sites (SNS) such as Facebook, Twitter, My Space. For example, MasterCard recently allowed developers to enter their payment system, embed a payment feature in virtual games or e-commerce applications on SNS such as Twitter and Facebook (Ericsson Business Review, Issue No. 2, 2010, p. 17)

As mentioned above, since the concept of E-banking has now evolved to any electronic efforts that allow customers to access to banks' system more easily, banks are making moves to install their services on all possible communicational platforms. The ATM machine is one such platform, which is now connected to the Internet, enabling customers to conduct transactions in flexible environment, where PC usage is impossible.

Another important platform – based realm of E-banking is mobile banking. Telecom is a must-do area, where the mobile population in almost any country is reaching its maturity stage. The emergence of RFID (Radio Frequency Identification) technology and later on, NFC (Near Field Communications) is driving growth in mobile banking. The dream of contactless payment have become more and more within reach (Billing of OSS World, 2009).

In fact, RFID based payment has already been a reality in certain bank programs such as Oyster Transport Card in London, UK, the Octopus Card in Hong Kong and the MasterCard PayPass Program in the USA. A little beyond the sphere of pure

banking, RFID based payment has been brought into use widely in transportation payment in Japan in recent years (Banking Technology, RFID in banks).

Many E-banking enthusiasts have sought to predict the future evolvement of E-banking. One such forecast is made by Petrus and Nelson (2006), who speculated that the future of banking would be WAP enabled banking and interactive TV banking (Petrus Guriting, Nelson Oly Ndubisi, 2006).

While there have been hypes about the dominance of E-banking in this century and the growth it fuels, it should be noted that adoption of E-banking would also expose banks to risks and challenges. John Wenninger pointed out that by going electronic in various means, banks are exposed to strategic risks and operational risks. In strategic view, the debate on whether E-banking will supplement brick and mortar traditional methods or replace them is still ongoing. From the operational side, banks' independence on electronic market place has made it increasingly vulnerable to technology failure(John Wenninger, 2000, Federal Reserve Bank of New York). The way banks respond to these risks may also be an interesting answer to the question of what affects bank's level of e-commerce adoption.

2.3 The big picture of E-banking in Vietnam

2.3.1 Overview of banking industry in Vietnam

After 1975, the government nationalized the entire banking system under old regime including 7 state-owned banks and 17 private banks. The State Bank of Vietnam (SBV) acted as the central bank; interestingly, it acted as both a monetary

policy institution and a regular commercial bank. The landmark of Vietnam's banking history was year 1988 when the government decided to separate four State – owned banks from the State Bank of Vietnam (SBV) (Le Minh Tam, 2000,). SBV still performs as the central bank.

The introduction of open-door policy, which encompassed a more tolerant attitude toward the private sector, has brought about significant changes in Vietnam's banking industry. To a certain extent, it implied compulsory structural changes within banks to live up to the emerging private sector. If previously banks mainly acted as compulsory lenders for State owned enterprises, the advent of open-door policy required that banks now perform more in line with a market-oriented mechanism. Currently there are about 122 banks operating in Vietnam, with almost 50 percent being foreign bank branches and representative offices. (Le Minh Tam, 2000,).

Nonetheless the four State-owned banks account for 71.9% of total banking assets in 2002 (Le Minh Tam, 2000,). They also hold 80% of all lendings (International Business Wiki, Vietnam Banking System). In the mean times, these banks have been plagued with bad debts and nonperforming loans. These banks are:

1. Vietnam Bank for Agriculture and Rural Development
2. Bank for Investment and Development of Vietnam
3. Industrial Commercial Bank of Vietnam
4. Foreign Trade Bank of Vietnam

Facing intense pressure to reform and improve competitiveness, Vietnam government has been taking measures to reform the banking and finance sector. From 1996 to 2002, the government initiated deregulation of interest rates on both Vietnam Dong and foreign currency deposits and loans. In 2005, Vietnam government decided to equitize all State-owned banks toward 2010, a step toward significant structural reform in response to its WTO accession. Recently, the permission for 100 percent foreign owned banks to enter the market as committed to WTO has also helped altered the competitive landscape in banking sectors. The early results showed that the amount of loans and deposits held by State- owned banks went down to roughly 50 percent in 2009 (Swiwah Leung, Asean Economic Bulletin, 2009), as opposed to 80 percent in 2002.

These positive momentums have translated into responsive public change of saving and spending habits. According to Leung (2009), bank deposits as a percentage of GDP grew from 60 percent in 2004 to 99 percent in 2007 (Swiwah Leung, Asean Economic Bulletin, 2009). This fact is in stark contrast with prior knowledge that Vietnamese generally have low confidence in banking sector and that a typical Vietnamese would rather store money "under the mat" than depositing them into banks due to insecurity. This improved dynamics apparently implies better ability to mobilize capital from the public, which is a significant improvement in Vietnam's banking sector. Furthermore, the fact that state banks market share has shrunk and Joint Stock banks' increased indicated better source of credit for private sector. In 2007, credit

growth among Joint Stock banks almost reached 95 percent (Swiwah Leung, Asean Economic Bulletin, 2009).

Nonetheless, on a more conservative side, it should also be noted that the penetration rate of banking services into Vietnam's population is only 10 percent (IFC 2008). This means informal banking services may be the underlying forces that help satisfying banking needs among the population, which inherently indicated a high level of risk and instability. The competition landscape therefore not only includes official banks and financial institutions, but also the unofficial financial market, or the so-called black market. To make competition even more intense, the regulatory cap on lending rates means that banks profit will drop (World Bank 2008). This logically means that most banks would have to look to other means to cut cost and diversify their portfolios to sustain their level of profitability.

2.3.2 E-banking in Vietnam.

Like Vietnam's banking sector, E-banking in Vietnam is also making baby steps toward modernization. The concept of E-banking in Vietnam to date only rests at computerization of al traditional banking activities. While most banks in Vietnam now have websites to communicate with their customers and to present their information, commercial banks are reluctant to adopt E-banking is the major instrument for growth.

The standard format of bank identifier code, SWIFT, was introduced in Vietnam in March 2005. However, in 2007, only a few banks such as Vietcombank, Incombank, ACB, Exim Bank, ANZ and City Bank provided home banking. Vietcombank,

Techcombank, HSBC, and ANZ and City bank offered telephone banking. Incombank, ACB, and Techcombank tiptoed around mobile-banking (Banks in Vietnam, 2007). Some banks like Citibank, HSBC, Deutsch Bank, ANZ bank started to provide real E-banking for the business sector.

Recent years, however, witnessed significant improvements in these areas. While Vietnam is still a cash economy, ATM transactions have become a daily experience for most Vietnamese. As of 2007, awareness of ATM cards, credit cards and debit cards were 91 percent, 21 percent and 8 percent respectively (Look at Vietnam, 2009). Visa was the most recognized payment cards. As reported by SBV, the total number of ATM cards issued in 2008 grew 100 percent compared to 2007. As of 2008, the total number of ATM cards issued was 4.2 million, and the number of ATM machines was 2, 257 (Wikipedia, Theory of reasoned Action).

The story of E-payment systems seemed less intriguing compared to ATM banking. The reasons were probably lack of secured means of on-line payment. To overcome the high fraudulence rate of Internet banking, as early as 2009 did the State Bank of Vietnam introduce a new online payment system with advanced security protection of technology. The bank suffered from 37 million USD loss from banking fraud in the first six month of 2008. In early 2009, the bank launched this new centralized e-payment system, covering 1500 branches and 63 banks. The system performs 2 million transactions worth of 1.9 billion per day.

The issue of Internet banking security has become a thorny topic in many conferences on technologies and banking recently. A research conducted by BKIS Security Vietnam in 2010 at 20 biggest banks of Vietnam who have adopted E-banking on their web security level showed that security remained the biggest issue that prevent E-banking from thriving. In a conference on "Web security problems of E-banking in Vietnam", Mr. Nguyen Minh Duc, Director of BKIS Security revealed that all 20 surveyed banks have problems with their network security. These problems included: personnel, process, ICT network, transmission, central management platform and environment, and E-banking technology applications (Fred D. Davis, Perceived Usefulness, MIS Quarterly,1989). These problems would pose great obstacles in smooth implementation of E-banking in Vietnam.

Mobile banking did not show very exciting signals either. As Internet banking moves slowly and cautiously forward, mobile banking in Vietnam has only made staggering baby steps. Main operators such as VNPT, Mobifone and Viettel have been making attempts to align with banks to build mobile payment systems that leveraged on their extensive pool of mobile customers. However, due to limited technology aptitude, these mobile payment systems remained modestly functional. Basically current mobile banking are SMS-based, a rather primitive way of access to bank resources and information. On top of that, the question of network security is still looming, making it hard to inject a big push in this segment of E-banking in Vietnam.

With a sizable pool of online and mobile population, Vietnam market holds great potential for E-banking. The high growth economy also needs speedy circulation of capital to meet up with its capacity. E-banking has only emerged as a phenomenon in Vietnam in the last 5 years, which explains its modest achievements and the country's caution in adopting it. Despite the zeal and exuberance of customers when first exposed to this high-end way of banking, the question o network security still hover over most E-banking plans and strategies.

2.3.3 E-banking in Nam Dinh

Nam Dinh is considered a highly potential economic zone in Vietnam with the average growth rate in the past five years reaching 7.7 percent. (Vvenkatesh.com, Theoretical Models)

The percentage of manufacturing, construction and services is 61 percent. This signals a structural shift into a more production-oriented economy as opposed to a previously agricultural economy. Nam Dinh possesses some of the most developed textile and garment factories in the country, which has contributed significantly to the country's export quotas in the past five years.

As the economy speeds up, the banking sector in Nam Dinh also has to follow to meet the rising capita needs among businesses. However, the growth of banking service sector in Nam Dinh has not been as robust. Part of the reason is the catching up IT infrastructure in Nam Dinh.

Another reasons is that attention to E-banking has been mostly Hanoi and Ho Chi Minh city centric and other provinces would follow the trend. Lack of in-depth researches resulted in a less specific description of the big picture of E-banking adoption in Nam Dinh. Currently there are about 30 banks in Nam Dinh, with many of them being branches of big national banks. A large part of the remaining banks are targeted to support the poor in funding their livelihood activities. This very specific nature of banks might also influence the speed at which they adopt Internet banking because the demand for such high end services is still limited.

2.4 Technology Acceptance Model

In this study, we attempt to utilize the Technology Acceptance model to assess the determinants that affects Nam Dinh ban's decision to adopt E-commerce. The reason why we decided to choose this model as the analytical framework is because its high level of relevance to the research questions and its wide applications within research literature on technology acceptance. Moreover, the TAM model is the most typical quantitative model to assess technology penetration. It is also evident that to have a detailed, accurate and quantifiable measurement of technology acceptance, it is highly important that quantitative approach is applied. First, it would be able to confirm numerically the accuracy of hypotheses. Second, it would be able to justify the strength of relationship between independent and dependent variables. As such, TAM model is a logical choice as anaylitical framework for this study.

Many studies sought to answer the question of what determine banks' acceptance of E-banking. Among others, the Technology Acceptance Model has earned wide and far influences and ramifications. The original version of TAM model was the Theory of Reasoned Action (TRA), developed by Ajzen and Fishbein (1980), which aimed at studying attitude and behavior. TRA is a general behavioral studies which suggests that a person's attitude toward a behavior and social norms will affect how the person behaves later on (Kwasi Amoako – Gyampah and A.F. Salam, 2003).

Based on this foundation, Fed Davis and Richard Bagozzi developed the Technology Acceptance Model (1989 &1992). The TAM model is more technology centric, where a lot of attitude measures have been replaced by two variables: ease of use and usefulness (Kimberly, J.R, & Evanisko, M.J.,1981). The study's instrument is a questionnaire using Linkert 5 point scale to measure respondent's attitude and behavior. In 2000, Venkatesh and Davis revised and extended the original TAM model to TAM 2. The TAM 2 model sought to examine perceived ease of use and perceived usefulness in light of social influences and behavioral intention. Specifically, the model included extra social influencers such as: Performance expectancy, effort expectancy, social influence, and facilitating conditions. Demographic attributes are also taken into account with gender, age, experience and voluntariness of use being the dependent variables (Tornatzky, L.G., & Fleischer, M.,1990).

Like TRA, TAM assumes that a person is free to act upon their intention without a barrier, which, to some extent is unrealistic in today's world. This explains multiple

corresponding literature, where researchers attempted to extend this model to increase its ability to explain people's choice in technology adoption. For example, Kwasi and A.F. Salam has extended the original TAM model by adding an extra variable called Shared Belief in the Benefit of the system to examine the implementation of ERP. This variable is again, fragmented into 2 sub variables which are Communication on Related Projects and Training on the System (Hanniya Abid and Umara Noreen, 2007). His studies found that shared belief in the benefit of ERP system affect both Perceived Ease of Use and Perceived Usefulness. Training and communications are also found positively related to shared belief. (Hanniya Abid and Umara Noreen, 2007). Similarly, Martinez Torres, Toral Martin, Barreco Garcia, and Gallardo Vazquez utilized TAM to study influencers of E-learning. They adjusted the model significantly and by adding various other dimensions such as Enjoyment, Variablity, Communicativeness, Feedback, etc. The studies interestingly found that Perceived ease of use has no impact on the adoption of E-learning, which opens up a new perspective on technology adoption in the aspect of education (Hanniya Abid and Umara Noreen).

Various versions of TAM model have been created and explored to find out the most important determinants in people's decision to adopt a technology. In recent literature, the strictness of this model has been more loosely defined, and many other variables have been used to replace Perceived Ease of Use and Perceived Usefulness. Lavin Aghaunor (2006) confirms the importance of technology aptitude in e-adoption decision. By technology aptitude, he means the banks competency inn electronic world,

banks' incumbent ICT structure and resources set out for technology decisions. His study also found that commitment to E-commerce from top management is the key for banks' adoption of E-banking Since the study was conducted in the context of Nigeria, a developing country, Lavin also stressed the importance of the government's E-readiness in shaping banks' decision of adopting E-banking (Lavin Aghaunor, 2006).

Reinforcing Lavin's findings on the strong relationship between Banks' e-competency and the level of technology adoption, Yahya Dauda, Mphil found that in Malaysia and Singapore, the decision on whether or not to adopt E-banking depends largely on experience with the Internet and banking needs. Moving a little beyond the sphere of capacity, he also found a strong correlation between banks' trust in the security of the technology they are adopting (Yahya Dauda, Mphil, 2007). Interestingly enough, the subject of banking security is prevalent in most researches on E-banking adoption among developing countries. In his exploratory research in Pakistani's bank E-readiness, Hanniya Abid also concluded that trust is the number one factor that influences the decision to adopt E-banking among both banks and end-users.

A more comprehensive look at the reviews would show that network security and technology aptitude is just two sides of a coin. That means, according to these researches, up to this point, the most influential factor in firms' decision to e-adopt is probably still their capacity in technology. Understandably, firms in developing countries are more reluctant about this prospect since the ICT platform and the average

level of technology aptitude may not live up to the nuances of the applications that E-banking requires.

2.5 Discussion

Movement, to study factors impact to user's acceptance about a particular technology, there are a lot of people adopted some of theories such as TRA, TBP or TAM model. The TAM model was developed by Davis 1989 aim to evaluate acceptance of individual people for a particular technology (Davis, 1989). The objective of this thesis is study acceptance of people who are staffs, managers working on banking field at Nam Dinh province. Therefore, the TAM model is suitable better for this propose of thesis.

Moreover, in january-2000, there are 424 journals of many researchers who applied the TAM model in order to evaluate user's behavior intention (Venkatesh and Davis, 2000). Mean that the TAM model is a favor model to research user's acceptance for applying a particular technology.

Therefore, this thesis will apply the TAM model aim to evaluate acceptance of user to use e-banking in the banking field at Nam Dinh - Vietnam.

Chapter 3 Research Methodology

3.1 Research Approach: Qualitative VS. Quantitative Research Approach

In the effort to explore and/or confirm research questions, scholars have developed two approaches: qualitative and quantitative. According to Oliver, 2004, quantitative approach originated from the natural science's objective research methodology where scientists examine the relationship between one independent variable and several dependent factors. Causal relationship is the core of quantitative method, which is obtained through analysis of numerical data. Qualitative research is essential for decision makers to understand to what exact extent certain factors impact on the independent variable.

On the other hand, qualitative research leans on a more comprehensive and institutive approach. It involves the use of qualitative data such as in-depth interviews, secondary documents research (desk research) and participants' observations to account for the research questions. Qualitative research is the way to go when researchers want to understand the big picture with all the nuances and dynamics. On the upside, qualitative research helps us obtain a comprehensive look at the matter in question. On the downside, it would not be able to offer accurate numerical answers on the impact of each researched dimension the independent variable in question.

Choice of research approach depends largely on the research concern. If we already nail down the influential factors on the matter in discuss, quantitative approach is the appropriate method to give a confirmatory results. Yet, if we are unsure of all the

dynamics of the discussed matter, qualitative research is a better choice to give us an overview of the story before diving deeply into what really matters.

Standing from this point of view, we have chosen the quantitative approach to address the questions in discuss. This research would be more of an confirmatory nature, where we would seek to answer the questions in focus through examining data and the correlation between dependent variables and variables.

3.2 Research model

In this research, we would use the original TAM model to investigate the determinants of E-banking adoption in Nam Dinh. As can be seen from the diagram below, we would seek to measure Perceived usefulness (PU) and Perceived ease of use (PEOU) and examine the relationship between these two variables and Attitude toward E-banking. We then would explore the correlation between AT and Intention of Use (IT). The questionnaire included in Appendix 1 have described all these four dimensions on Linkert 5 point scale so that we can later on express these relationship easily in numerical terms.

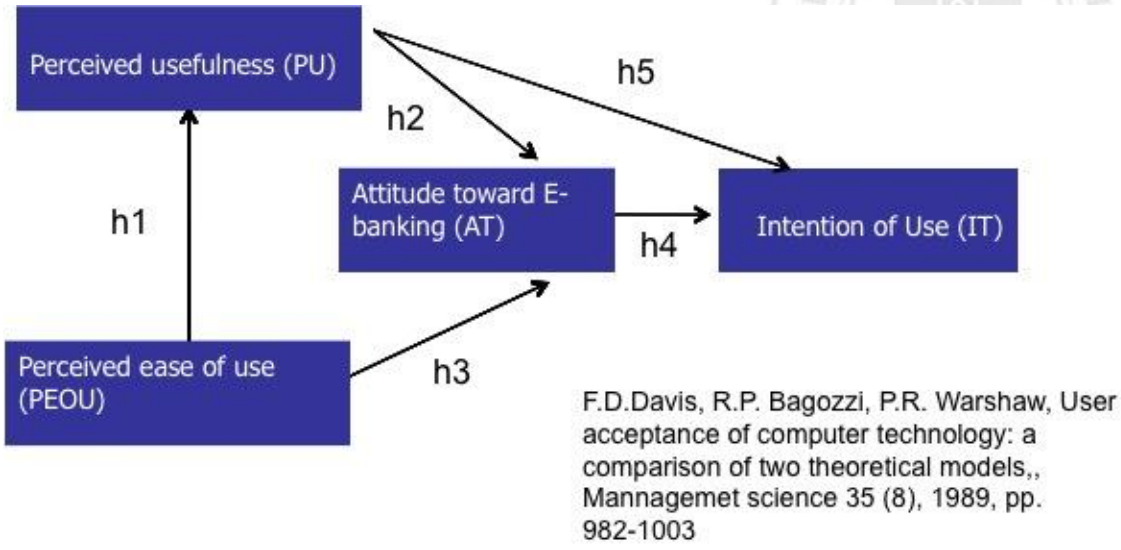

Figure 2. TAM model

3.3 Research Hypothesis

H1: There exists a positive correlation between Perceived Ease of Use and Perceived Usefulness.

H2: There exists a positive correlation between Perceived Usefulness and Attitude toward E-banking.

H3: There exists a positive correlation between Perceived Ease of use and Attitude toward E-banking.

H4: There exists a positive correlation between Attitude toward E-banking and Intention of Use.

H5: There exists a positive correlation between Perceived Usefulness and Intention of Use.

3.4 Data Collection Methods

This is a confirmatory research that evaluates the status quo of E-banking in Vietnam, the perceived influential factors on banks' adoption decision. To address these questions, we would collect numerical data by using the pre-designed questionnaries. We would seek to interview 10 banks in Nam Dinh, and in each of these bank we would interview 20 staff. The reason why we narrow down this population because, as explained above, a large portion of banks in Nam Dinh are designed to support poor people and within this group, the dynamics of services may not be market-oriented enough to include in this sample.

To approach these banks, we would send invitation letters to banks' administrators and their IT managers to attend our interviews. It should be noted that interviewing more high ranking management executives would be infeasible, therefore in the study we opt for these more practical choices. Interviewing IT managers would allow us to understand banks' current IT sophistication and their openness to new applications. In the mean time, administrators would give us a broad view of banks operations and the necessity and urgency of E-banking adoption. The interview would be recorded and put into transcripts for thorough analysis afterwards. The data churned out should include both demographic information and detailed points of view.

3.5 Sample Selection

As stated in the previous section, the selected sample would include 30 major banks in Vietnam. The sample structure is described in the table underneath.

Table 1. Sample Selection

Types of banks	Number	IT Manager (each bank)	Staff (each bank)
Joint Stock	5	1	19
State owned	5	1	19
Total respondents		**200**	

The core of most researches, again, includes comparisons and contrasts; we therefore choose to divide the sample into 2 different fragmentations. We fragment the sample by ownership; that is, state-owned banks vs. joint-stock and foreign banks. We assume that differences in ownership also influences strongly banks' policies and openness to technologies. It should also be noted that State-banks are normally more large scale than joint stock banks. As such, the difference in terms of scope of works may also account for their choices of technology adoption.

Chapter 4 Data Analysis and Results

Following the survey plan discussed in chapter 3, we have approached 200 respondents from both joint-stock and State banks. We attempted to strictly follow the sector breakdown which involves targeting IT and staff at 5 joint stock banks and 5 state banks. The survey was conducted within a month; during which time we were able to reach 180 respondents. After thorough data screening, 4 questionnaires were deemed invalid. The final relevant data points were 178, which indicate that the response rate was 88 percent. This is a relatively high response rate, which may be due to the fact that the survey was conducted within the province of Nam Dinh. Another reason is our detailed list of respondents and close relationships with banks in the province.

4.1 Sample Description

In this section I would focus on the demographics information of the surveyed sample. As mentioned in Chapter 3, the corresponding survey targeted mainly bank officials and IT managers at banks. The table below captures all basic features of the surveyed sample. The data are mainly presented in frequencies and percentages.

Table 2. Demographics of the surveyed sample

Measure	Item	Frequency	Percentage (%)
Bank type	Joint Stock Bank	74	41.1%
	State Bank	104	58.9%
	Male	105	59.1%

Gender	Female	73	40.9%
Title	IT	11	6.3%
	Bank Official	89	49.7%
	Management	47	26.4%
	Administrative	31	17.6%
Education	College	132	74.2%
	Master	19	10.7%
	Ph.D.	11	6.3%
	Other	16	8.8%
Age	22-30	74	42.1%
	30-40	54	30.2%
	40-50	29	16.4%
	Above 50	21	11.3%

As can be seen from the above table, there is an even split between the number of respondents from joint-stock banks and state banks (51.6% and 48.4% respectively). The majority of the surveyed respondents are aged between 22 and 40 (more than 70% in total). It is also apparent that this sample group is very well educated because more than 90 percent of them hold a college degree at least. This is understandable because the targeted group in the research desire consists of mainly key people in banks who are in the position to give a big picture of E-commerce applications in their workplaces. These percentages have therefore shown that the survey fieldwork has strictly followed

the initial design and would therefore narrow the gap between research design and execution.

Table 3. Descriptive analysis for questionnaire items

Constructs	Items	Min	Max	Mean	Std.Deviation
PU1	178	1	5	3.0112	.94474
PU2	178	1	5	3.0169	.95358
PU3	178	1	5	3.0169	.95358
PU4	178	1	5	3.0056	.94777
PU5	178	1	5	3.0000	.98003
PU6	178	1	5	3.0112	.96251
PEOU1	178	1	5	2.9607	.89797
PEOU2	178	1	5	2.9944	.92362
PEOU3	178	1	5	3.0056	.94777
PEOU4	178	1	5	2.9944	.94777
PEOU5	178	1	5	2.9551	96738
PEOU6	178	1	5	2.9831	.96536
IT1	178	1	5	2.9326	1.08714
IT2	178	1	5	2.9382	1.14072
IT3	178	1	5	2.9775	1.13970
IT4	178	1	5	2.9326	1.12293
AT1	178	1	5	2.9494	1.52298
AT2	178	1	5	2.9438	1.51348

PU = Perceived Usefulness

PEOU = Perceived Ease of Use

AT = Attitude toward usage

IT = Intention to use (Refer to Questionnaire in Appendix 1)

The table above summarizes basic descriptions of 18 variables used in the TAM model. As can be seen, we use six variables to measure Perceived Usefulness (PU), six variables to measure Perceived Ease of Use (PEOU), four variables to measure the intention of use at surveyed banks, and two variables to measure attitude toward E-banking. All variables were measured using Linkert scale of five, with 1 equal "Totally disagree" and 5 equals "Totally Agree" (Refer to questionnaire in Appendix1).

As evident in the table, we can see that most respondents reflected slight reluctance when asked to voice their opinion on E-banking. The proof is that the Mean of most variables are around 3, which equals "Don't know" or "Unsure". It should also be noted when asked about intention of use and attitude toward usage, most respondents chose values lower than 3 (Mean values for these variables are smaller than 3), which equates Disagree. This indicates that the sample is slightly skewed toward unfavorable view of E-banking usage at their work place. Although these figures do not reveal the dominating trend, they somewhat show that an average respondents are somewhat reluctant about the idea of using E-banking.

4.2 Validity and Reliability Testing

4.2.1 Reliability analysis of variables

Before going on with hypotheses testing, it is crucial that we run solid data mining to make sure that the data is eligible for further investigation. There are various statistical measures as to whether a data set is reliable, one of which is Cronbach's Alpha Test. Cronbach's alpha is commonly used as a measure for internal consistency

of data. Since several items are used to measure one construct, it is important that there is an acceptable level of internal consistency within each construct. Table….below demonstrates Cronbach Alpha statistics of each item. It is generally agreed that Cronbach's Alpha values should be at least 0.7 for an item to be reliable within a construct. As can be seen from table…, almost all Cronbach's Alpha values are from 0.8 tp 0.9, which indicates a high level of consistency within each construct. This consistency again indicates high reliability and it is therefore positive for us to move on with further analysis.

Table 4. Summary of Cronbach Alpha values of main factors

Factors	**Items**	**Cronbach's Alpha**
Perceived Usefulness	6	0.8625
Perceived Ease of Use	6	0.837
Intention of Use	4	0.859
Attitude toward usage	2	0.808

4.2.2 Validity Analysis

To verify the validity of each item, we attempt to use factor analysis approach. Factor analysis is a statistical method which aims to find joint variations between observed variables in order to identify data reduction possibilities. If factor loadings within each components are bigger than 0.5 then the component's level of validity is high. As can be seen from Table 5, all factor loadings across four components exceed 0.5, which indicate strong validity.

Table 5. Factor analysis

VARIMAX Rotated Component Matrix[a]

	Component			
	Perceived Usefulness	Perceived Ease of Use	Intention of Use	Attitude toward using
AT1				.814
AT2				.802
PU1	.864			
PU2	.871			
PU3	.868			
PU4	.867			
PU5	.844			
PU6	.861			
PEOU1		.823		
PEOU2		.830		
PEOU3		.832		
PEOU4		.860		
PEOU5		.827		
PEOU6		.848		
IT1			.837	
IT2			.847	
IT3			.872	
IT4			.881	

Table 6 illustrates the Eigen values and cumulative percent of variance. Consistent with the factor loadings analysis above, all four components have their Eigen values greater than 1, which indicates high significance in explaining technology acceptance process. A further investigation shows that:

For Perceived Usefulness, the cumulative percentage of variance explained by 6 items, are 98.5%.

For Perceived Ease of Use, the cumulative percentage of variance explained by 6 items, are 96.1%.

For Intention of Use, the cumulative percentage of variance explained by 4 items, are 95.3%.

For Attitude toward usage, cumulative percentage of variance explained by 2 items, are 96.0%.

Table 6. Eigen values and Variance

Factors	Eigenvalues	Cumulative %
PU	1.972	98.582
PEOU	5.768	96.141
IT	5.721	95.348
AT	3.842	96.040

These percentages show that the choices of factors in explaining technology acceptance were highly relevance as the components have covered a high level of variance.

4.3 Regression Analysis

To test hypotheses proposed in 3.2., we would use linear regression analysis approach. Linear Regression approach use linear combinations to find relationships between independent and dependent variables. According to 3.2., we need to test 5 hypotheses as follows:

H1: There exists a positive correlation between Perceived Ease of Use and

Perceived Usefulness.

H2: There exists a positive correlation between Perceived Usefulness and Attitude toward E-banking.

H3: There exists a positive correlation between Perceived Ease of use and Attitude toward E-banking.

H4: There exists a positive correlation between Attitude toward E-banking and Intention of Use.

H5: There exists a positive correlation between Perceived Usefulness and Intention of Use.

To examine the relationship between these variables, we would run three linear regression analyses. First, the relationship between Perceived Usefulness and Perceived Ease of Use will be examined (H1). Next, we would study the correlation between Perceived Ease of Use, Perceived Usefulness and Attitude toward usage (H2,H3). Finally, we would focus on the relationship between Attitude toward usage, Perceived Ease of Use and Intention of Use (H4, H5)

4.3.1 Linear Regression Analysis for Hypothesis 1: Relationship between Perceived Usefulness and Perceived Ease of Use

Table below summarizes the regression results for testing hypothesis 1: there exists a positive relationship between Perceived Ease of Use and Perceived Usefulness. The results shows that a positive relationship between these two variables exists at significance level 0.001 (F = 181.186, p=.000, t = 13.461). We therefore accept

hypothesis 1 that there is a significant positive relationship between Perceived Usefulness and Perceived Ease of Use. R-square value of 0.507 indicates that Perceived Ease of Use can 50.7% of the times explain Perceived Ease of Use. The remaining 49.3% of the times could be explained by other latent variables.

This indicates that Perceived Ease of Use plays an important role in explaining the variance in Perceived Usefulness, other things equalled. We can therefore come up with the conclusion that whether a respondent finds an E-banking application easy to use will significantly influences that person's notion of whether that application is useful or not.

Table 7. Regression coefficients for H1

Factors	Constant	Standardized Coefficients β	t-value	R2	Adj-R2	F value	Sig.
Perceived Ease of Use	0.881	.712***	13.461	.507	.504	181.186	.000

Dependent variable: Perceived Usefulness

***p<0.001, **p<0.01, *p<0.05, $^{+}$p < 0.1

The corresponding regression is as follows:

Perceived Usefulness = 0.881 + 0.712 * Perceived Ease of Use + e

4.3.2 Linear Regression Analysis for Hypothesis 2,3:

Relationship between Perceived Usefulness and Attitude toward Usage

Relationship between Perceived Ease of Use and Attitude toward Usage

The results of linear regression analysis for factors influencing Attitude toward usage are summarized in Table…. According to these results, there is a significant positive correlation between Perceived Ease of Use and Attitude toward usage Similarly, there exists a positive relationship between Perceived Usefulness and Attitude toward usage. These correlations are confirmed at significance level 0.001 with very positive goodness of fit, (t=7.056 and 4.284, F = 112.835, Sig = .000).

Also, the fact that R-square equals .563 means that 56.3 percent of the time the combination of these two factors can explain the variance in Attitude toward usage of E-banking. This figure presents a good explanation capacity of these two factors for Attitude toward usage. We therefore accept hypothesis 2 and hypothesis 3. We can conclude that Perceived Ease of Use and Perceived Usefulness are important indicators that an average respondent in this sample will have positive attitude toward using E-banking applications. In other words, if a respondent finds an E-banking application easy to use and useful, he or she will be more likely to have positive attitude toward using it in the future.

Table 8. Regression Coefficients for H2,3

Factors	Constant	Standardized Coefficients β	t-value	R2	Adj-R2	F value	Sig.
Perceived Ease of Use		.502***	7.056	.563	.558	112.835	.000
Perceived Usefulness	-.973	.305***	4.284				

Dependent variable: Attitude toward usage

***p<0.001, **p<0.01, *p<0.05, $^{+}$p < 0.1

The corresponding regression is as follows:

*Attitude toward usage = -.973 + .502*Perceived Ease of use + .305* Perceived Usefulness + e*

4.3.3 Linear Regression Analysis for Hypothesis 4,5:

Relationship between Attitude toward Usage and Intention to Use

Relationship between Perceived Ease of Use and Intention to Use

Linear Regression results for hypothesis 4 and hypothesis 5 also confirms that these hypotheses are correct. It can be seen from Table…that the relationship between Attitude toward usage and Intention to Use and that between Perceived Usefulness and Intention to Use are significant. The strength of goodness are shown in good indicators such as F-value equaling 99.743, and t values for two coefficients equaling 2.367 and 8.861. The R-square value of .533 indicates that 53.3% of the times the variance in the intention to use E-banking applications at banks can be explained by the combination of Attitude toward Usage and Perceived Usefulness.

Table 9. Regression Coefficients for H4,5

Factors	**Standardized Coefficients β**	**t-value**	**R2**	**Adj-R2**	**F value**	**Sig.**
Attitude toward usage	.163**	2.367	.533	.527	99.743	.000
Perceived Usefulness	.611***	8.861				.019

Dependent variable: Intention to use

***p<0.001, **p<0.01, *p<0.05, $^{+}$p < 0.1

However, this time there is a difference between confidence levels of the two factors. With p-value equaling .000 and .019 respectively, it can be said that:

We are 99.9% confident that there is a significant positive relationship between Perceived Usefulness and Intention to use, whereas,

We are 99% confident that there is a significant positive relationship between Attitude toward Usage and Intention to Use.

We therefore accept hypothesis 4 and 5 that there exists positive correlation between Attitude toward Usage and Intention to Use as well as between Perceived Usefulness and Intention to Use. Presumably, this indicates that whether a respondent chooses to use an E-banking application depends on if he or she finds it useful and has positive attitude toward it.

It should, however, be noted that perception of usefulness plays a more important part in a person choice of using an application as opposed to their attitude toward it. (Coefficients of PU and AT are .611 and .163 respectively, t values of PU and AT are 8.86 and 2.37 respectively). This result implies that the most important point for a surveyed respondent to choose to use an E-banking application is perception of usefulness. While Attitude toward usage also plays a role in this decision, it may not be overly important considering the results of this survey.

The corresponding regression is as follows:

Intention to Use = -.413 + .163*Attitude toward Usage + .611* Perceived Usefulness + e

Figure 3 below has summarized all the relationship between factors and their corresponding coefficients

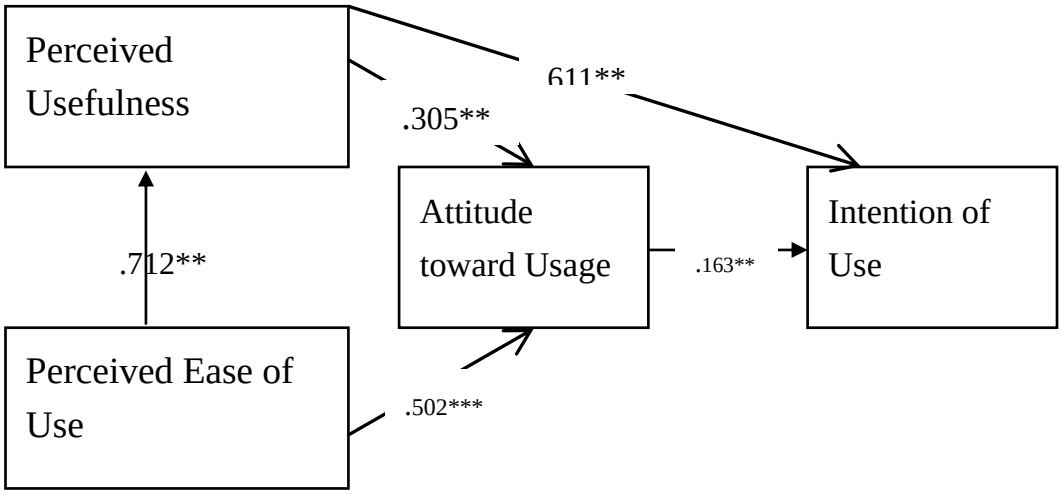

Figure 3. Regression model

To sum up, table 10 below has summarizes all hypotheses testing results in this research.

Table 10. Hypotheses testing summary

Research Hypotheses	**Results**
H1: There exists a positive correlation between Perceived Ease of Use and Perceived Usefulness	Supported
H2: There exists a positive correlation between Perceived Usefulness and Attitude toward E-banking	Supported
H3: There exists a positive correlation between Perceived	Supported

Ease of use and Attitude toward E-banking	
H4: There exists a positive correlation between Attitude toward E-banking and Intention of Use	Supported
H5: There exists a positive correlation between Perceived Usefulness and Intention of Use	Supported

Chapter 5 Research Conclusions

5.1 Research Findings

In this research we seek to investigate factors influencing Nam Dinh's banks' decision on whether or not to adopt E-banking using the Technology Acceptance Model developed by Davis, Bagozzi and Warshaw. This model assumes three most important factors influencing user's decision of adoption of a technology, which are: Perceived Usefulness, Perceived Ease of Use and Attitude toward Usage. We assumes that there are positive relationship between these factors and Intention of Use, which indicates that Perceived ease of Use, Perceived Usefulness and Attitude toward Usage would positively influence a person's choice to adopt E-banking in Nam Dinh.

A survey on a sample of 200 people across 10 banks in Nam Dinh has resulted in a data set of 178 valid data points. Thorough data examination has shown confirmed our initial assumptions that Perceived Usefulness, Perceived Ease of Use and Attitude toward Usage have a positive relationship with Intention to Use. It should, however, be noted that Perceived Usefulness plays the most important role in determining banks' intention to use an E-banking applications. Perceived Usefulness is also the driving factor underlying a respondent's notion of whether an application is useful or not; similarly, this factor also strongly influences respondent's attitude toward E- banking usage.

5.2 Implications

1. Academic implications

This thesis has studied acceptance of users for e-banking system. Thereby, a model of factors affecting the adoption of e-banking in the banking field has been developed, paving the way for future research and applications continue to expand this model to more the study factors affect to user's acceptance of e-banking system in the banking field, and this is the basis for the development and application of banking services in the future for the banking system in Vietnam's general and Nam Dinh province in particular.

2. Managerial implications

The findings stress strongly on the role of Perceived Usefulness on bank's intention to adopt E-banking applications. This finding has very straight forward meaning to management and leaders of banks who seek to expand the use of E-banking within their banks. That is, in order to convince staff to use E-banking applications extensively, it is crucial to show them how these applications benefit their work and their performance in both long and short run. It is also important for banks' management to pay special attention to the level of usefulness of the E-banking applications that they choose to make sure that they will be used widely later down the road.

Another point to note is that, the idea of usefulness here should be seen from the perspective of users. "Perceived Usefulness" here means what most users find useful. Therefore, before choosing which E-banking applications they should apply across the banks, it is necessary for management to conduct an internal survey as to what

functions staff at all levels find useful for their work. This is especially important to note because sometimes management's view and staff's perception of usefulness do not match. Such a survey may reconcile the difference and guarantee more sustainable development of E-banking. This finding should be incorporated into management's strategic point of view to build a comprehensive solution.

Since Perceived Ease of Use also significantly influences respondent's attitude toward using E-banking applications, another implication that managers should take into consideration is the user-friendliness of the applications they choose to implement. For the use of such applications to be long term and sustainable, it is highly important that banks management seek to make it easiest possible for their staff to use these software. In-depth training is also much needed to improve the notion of "Ease of Use" for banks' staff. In so doing they can significantly improve staff's attitude toward these new technology.

3. Policy Maker Implication

This finding also bears significant meaning for policy makers who seek to roll out E-banking on a larger scale. Because such introduction is similar to marketing a product to a targeted population, it is essential that policy makers take into account Perceived Usefulness and Perceived Ease of Use in their execution. For example, Usefulness and User-friendliness could be counted as one of the criteria for an E-banking application or program to be approved or implemented because only by following these criteria can we guarantee sustainable usage.

Not only should they be used as Pre-introduction criteria, Perceived Usefulness and Perceived Ease of Use should also be counted as Post-introduction meters to judge whether an E-banking program was successful or not. Such information would be of great significance for future implementation of other programs.

4. Software Developer Implication

More than anyone else, software developers should take the findings of this research most seriously because it bears great implication about how their products should be improved in the future. A sound conclusion for software developer is that Usefulness sand User friendliness are two most important factors to consider as they decide to launch a new product in E-banking. The definition of Usefulness and User-friendliness should be customized based on specific circumstances. Under these situations, further researches need to be conducted to obtain more tangible production orientation.

5.3 Limitations

A limitation we ran into as we conduct this study is the differences of experiences in E-banking across our respondent population. Even though we have sought to reach respondents with similar background, education and positions at different banks, it is still impossible to guarantee that these respondents have the same perception on Usefulness, User-friendliness, or the level to which an application has supported their performance at work. Also, since banks do not implement similar E-banking applications, it is even harder to make sure that these respondents' definitions of

usefulness and user friendliness are the same. This variety may be the main reason for the missing variance that the R-square values in most regressions.

Secondly, because the study was conducted within the province of Nam Dinh, among a small group of banks, the results might not be representative of the whole population. Even though we have sought to segment the surveyed population into State banks and Joint stock banks to increase variety, the fact that these banks are too close in proximity may make the results some what skewed.

Finally, since Nam Dinh is not the country's technology hub, applications of E-commerce still remain limited. Respondents' limited experience with E-banking would also be one of the factors that may hinder the accuracy of their answers.

5.4 Further Study

To overcome the aforementioned shortcomings, we propose several solutions to improve accuracy. Firstly, we need to screen out banks with similar experiences in terms of both E-banking usage and duration of use among respondents to make sure that we can hold other things equal as we conduct the relationship between these factors.

Secondly, to improve neutrality and objectivity, we need to increase the sample size as well as the regions we cover so that the results will be representative of the populations of banks across the country.

Thirdly, to gain more insights from such study, it is also highly recommendable that we conduct comparisons across different groups of respondents. For example,

management point of view in E-banking usage may be a few steps further from Staff's perception. Such results would bear great importance for managerial strategies in implementing such applications extensively and intensively.

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Appendix A

Research Questionnaire in English

E-BANKING IN NAM DINH PROVINCE

Scales to measure Nam Dinh's banks level of acceptance of E-banking

GENERAL INFORMATION (GI)

1. Bank: _____
2. Respondent's

   Name:_____
3. Respondent's field of work:

   1. IT

   2. Bank official

   3. Management

   4. Administrative staff
4. Gender: 1. Male 2. Female
5. Education:

   1. High School Degree

2. Bachelor Degree

3. Master Degree

4. Ph.D. Degree

5. Other_____(Specify)

6. Age: 1. 22-30 2. 30 – 40 3. 40 – 50 4. Above 50

PERCEIVED EASE OF USE

PEU1. Learning how to use E-banking applications is easy for me	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PEU2. I find the current E-banking applications at my bank flexible to interact with	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PEU3. Learning how to use E-banking applications is easy for me	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PEU4. I find it easy to get the current E-banking applications at my bank to do what I want to do	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PEU5. It is easy for me to become skillful at using the current E-banking applications at my bank	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree

5	Totally Agree

PEU6. I find the current E-banking applications at my bank easy to use	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PERCEIVED USEFULNESS

PU1. Using E-banking applications would help me complete my job more easily	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree
PU2. Using E-banking applications would improve my job performance	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree

5	Totally Agree

PU3. Using E-banking applications would increase the number of transactions I can manage per day.	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PU4. Using E-banking applications would improve my effectiveness on the job	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

PU5. Using E-banking applications would help me complete my job faster	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree

5	Totally Agree

PU6. I find E-banking applications useful for my the job	
1	Totally disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

ATTITUDE TOWARD E-BANKING (AT)

AT1. All things considered, I find the idea of using E-banking at my current bank a wise decision	
1	Totally Disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

AT2. I believe that E-banking will be the future of banking activities in my bank	
1	Totally Disagree
2	Disagree
3	Don’t know

4	Agree
5	Totally Agree

INTENTION OF USE (IT)

IT1. I am currently using E-banking applications quite often in my work	
1	Totally Disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

IT1. I am currently using E-banking applications widely in many aspects of my work	
1	Totally Disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

IT3. I believe that E-banking applications should be used more often and widely at my bank because it has really improved productivity.	
1	Totally Disagree
2	Disagree

3	Don’t know
4	Agree
5	Totally Agree

IT4. I think E-banking adoption would be a competitive advantage for banks.	
1	Totally Disagree
2	Disagree
3	Don’t know
4	Agree
5	Totally Agree

END OF INTERVIEW

Thank you very much for your help!

Appendix B

Research Questionnaire in Vietnamese

Ngân hang điện tử ở tỉnh Nam Định

Đo lường mức độ chấp nhận ngân hàng điện tử ở các ngân hàng tại Nam Định

Thông Tin Chung (GI)

1. Ngân Hàng: _____
2. Tên người trả lời :_____
3. Lĩnh vực công tác:

    1. IT

    2. Nhân viên văn phòng

    3. Quản lý

    4. Nhân viên quản lý

4. Giới tính: 1. Nam 2. Nữ
5. Đào tạo:

    1. Trung cấp

    2. Đại Học

3. Thạc sỹ

4. Tiến sỹ

5. Khác_____(Ghi rõ)

6. Tuổi: 1. 22-30 2. 30 – 40 3. 40 – 50 4. Trên 50

Nhận thức dễ sử dụng

PEU1. Việc học cách ứng dụng ngân hàng điện tử đối với tôi rất dễ.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PEU2. Tôi thấy ứng dụng hiện tại của ngân hàng của tôi linh hoạt trong tương tác.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PEU3. Học sử dụng ứng dụng ngân hàng điện tử là dễ với tôi	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PEU4. Tôi thấy thật dễ dàng nhận được cái tôi muốn từ ứng dụng ngân hàng	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PEU5. Thật dễ dàng có được các kỹ năng cần thiết cho ngân hàng điện tử ở ngân hang của tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PEU6.Tôi thấy ứng dụng ngân hàng điện tử ở ngân hàng tôi là dễ sử dụng.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

Nhận thức hữu ích

PU1. Việc sử dụng ứng dụng ngân hàng điện tử giúp công việc của tôi dễ dàng hơn.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PU2. Việc sử dụng ứng dụng ngân hàng điện tử giúp nâng cao hiệu quả công việc của tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý

5	Hoàn toàn đồng ý

PU3. Việc sử dụng ngân hàng điện tử giúp tăng khối lượng giao dịch hang ngày.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PU4. Việc sử dụng ứng dụng ngân hang điện tử giúp nâng cao hiệu quả công việc cảu tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

PU5. Việc sử dụng ứng dụng ngân hang điện tử giúp tôi hoàn thanh công việc nhanh hơn.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết

4	Đồng ý
5	Hoàn toàn đồng ý

PU6. Tôi thấy ứng dụng ngân hang điện tử hữu ích cho công việc của tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

ATTITUDE TOWARD E-BANKING (AT)

AT1. Tôi thấy ý tưởng sử dụng ngân hang điện tử là một quyết định khôn ngoan.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

AT2. Tôi tin ngân hang điện tử sẽ trở thanh hoạt động tương lai ở ngân hang của tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý

3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

INTENTION OF USE (IT)

IT1.Hiện tại tôi đang sử dụng ứng dụng ngân hang điện tử thường xuyên trong công việc của tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

IT1. Tôi sử dụng ứng dụng ngân hang điện tử rộng rãi trong công việc của tôi.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

IT3.Tôi tin rằng ứng dụng ngân hang điện tử nên được sử dụng nhiều hơn, rộng rãi hơn vì nó thực sự nâng cao hiệu quả.	
1	Hoàn toàn không đồng ý

2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

IT4. Tôi nghĩ rằng áp dụng ngân hang điện tử sẽ nâng cao khả năng cạnh tranh của ngân hàng.	
1	Hoàn toàn không đồng ý
2	Không đồng ý
3	Không biết
4	Đồng ý
5	Hoàn toàn đồng ý

Xin cám ơn sự giúp đỡ của bạn