Potential of developing and using mobile banking apps in Vietnam

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Abstract

Banking services have been a part of society for hundreds of years. Traditional banking services require physical interactions between customers and banks. However, mobile technology has brought banking services to another stage. Banking services have developed from cash in the bank to internet banking and now mobile banking. In recent years, the number of people using banking services in Vietnam has shown a dramatic increase. Instead of storing and using cash in every transaction, Vietnamese people have started trusting bank services for taking care of their money. Internet banking has been successfully adapted to the Vietnamese market and modern mobile banking is on the way to replace traditional banking in Vietnam.

This thesis is a quantitative study on customer behavior regarding new phenomenon: mobile banking and mobile banking apps. This thesis targets at studying how Vietnamese people perceive and approach mobile banking apps, as well as the challenges and difficulties of developing mobile banking apps in Vietnam.

Overall, the use of mobile banking applications in Vietnam is below its potential. Most of mobile banking apps users belong to the younger population. Younger people find it easy to adapt to new technology while middle-aged and old people meet many difficulties to get used to new technology. However, the younger population is largest group of labor force in Vietnam, which makes Vietnam a potential market for mobile banking apps. In order to gain a competitive advantage, banks still have to develop different strategies to balance between convenience and security if they want to increase the number of customers using mobile banking apps.

Keywords
Mobile banking apps, Vietnamese market, Smartphone. Android, Iphone.
Acknowledgement

I would like to express my appreciation to my professor, Ms. Elizabeth San Miguel, for guiding me during my thesis planning time. I was once frustrated with my thesis plan since it is quite new and she did guide me to correct my frustration.

I would like to give my best appreciation to my professor, and my thesis advisor, Ms. Jaana Melamies, for guiding me in this thesis. She did give me her guidance when I needed most. Without her help, I may not be able to finish this thesis.

I would like to thanks all people who participated in my survey. Without their participation, I would not be able to collect sufficient data to finalize the result.

I would like to give my deepest appreciation to my family, my father, my mother and my brother. They always supported me for these years since I started my study in Finland. Words cannot express my love and gratefulness to them.

Finally, I would like to give my best gratitude to Lily, who always stayed with me, supported me, encouraged me and took care for me when I needed most. For me, words are never enough to express how I am indebted to her.
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1 Introduction

The idea of this thesis topic came from the development of smartphone and the increase of smartphone users. In Finland, many banks had mobile banking application available in Google Play Store and Apple App Store. It increases the convenience for customers when they want to access their bank account in order to make payment and other banking activities. Compare to Vietnam, there are many banks sharing the market with 22 percent of population having bank account (Linh Lan, 2013). The number of smartphone users was at 21 percent at the end of 2012 and continue increasing quickly (Vietnamplus, 2012). Following an internet survey conducted by Nielsen in 2011, two out of every five people in Vietnam used smartphone with Internet access for different purposes. However, the concept of mobile banking service was new at that time and not many banks have their mobile banking apps available until 2013 (Huong Tra, 2013). In addition, the number of banks, which have their mobile banking apps available for smartphone users, does not receive many positive feedbacks from their customers. Moreover, the significant number of their customers is unaware of mobile banking apps in application stores, such as Google Play Store and Apple Apps Store.

Why mobile banking apps? According to Pentagon Federal Credit Union, there are some notable reasons that people should use mobile banking apps for routine financial tasks:

- Time saving: mobile banking apps are not only for checking balance. Instead of making a trip to nearby ATM or local bank branches in order to make transfer, payment or even deposit, mobile banking apps can provide these services just by a few touches.

- Secure transaction: the security system used by mobile banking apps was proven as secure as logging in with a computer. However, customers should be aware to download from trusted site, as there could be imposter apps designed to steal customers’ information.
Free of use: Most of mobile banking apps are free to download from application stores, such as Google Play Store and Apple Apps Store. However, customers may incur fees from data transfer. (Pentagon Federal Credit Union, 2014)

The use of mobile banking apps is part of electronic transaction. In 2007, Vietnamese government has established decree no. 35/2007/ND-CP, which acknowledged electronic transaction in banking activities. However, the decree has no specific guideline of issuing, designing and using of mobile banking apps. Therefore, the mobile banking apps are considered as ordinary electronic transaction.

Although there are a large number of people using banking services and many of them are currently using smartphone, the number of people using mobile banking apps is below potential and not all of Vietnamese banks issue their mobile banking apps service for smartphone users. These facts lead to a research: “Why most Vietnamese people are unaware of mobile banking apps?” and “The potential of developing and using mobile banking apps in Vietnam”.

To understand this dilemma in Vietnam, this study implemented quantitative research method to comprehend how Vietnamese people perceive mobile banking apps and their expectation on bank providers. This thesis was expected to set a foundation for future development of mobile banking apps in Vietnam.

1.1 Research objective

This study serves the purpose of finding answer for the following objective: “the potential of developing mobile banking apps in Vietnam”. This thesis went through these following steps to examine the problem.

To begin with, this research will design the theoretical framework. The theories of different terms related to the research topic will be collected and put together to form basis for the later stages of the research.
After that, this research will study Vietnamese regulations regarding to development, rights to issue and use of mobile banking apps throughout literature review. Currently, transactions conducted via mobile banking apps are part of electronic transactions, particularize in banking activities. This research incorporated the information about approval of electronic transaction in general and specifications in banking activities.

Finally, a survey questionnaire will be formed based on data gathered from literature review study. The questionnaire will be spread to customers from different banks in Vietnam in large scale to collect their responses, points of view and their expectation about mobile banking apps. Data obtained from the survey is primary source of this research. At the end, the result will be analyzed to provide answer to the question from the beginning.

1.2 Research Question (RQ) and Investigative Questions (IQs)

The following research question is set out to achieve the goal of the thesis:

How can Vietnamese banks develop their mobile banking apps to fit customers demand?

In order to have a detailed analysis for the RQ, four IQs are set forth:

1. How many bank in Vietnam have their mobile banking apps available for smartphone?
2. How many percent of Vietnamese people has bank account and are currently using mobile banking apps?
3. How Vietnamese customers perceive and approach mobile banking apps in the future?
4. What are their expectations on mobile banking apps?
5. What are the challenges of mobile banking apps in Vietnam?

To answer these IQs, primary data gathered from the survey, which is spread to customers from different banks in Vietnam, and secondary data gathered from researching the availability of mobile banking apps in Vietnam, will be analyzed together.
1.3 Demarcation

The thesis focuses on final consumers of banks in Vietnamese market. Currently, there are not many similar topics related to the combination of new technology and banking services. Similar topic about the technology and banking usually focus on the use of internet banking. However, the internet now become popular and most people can have access to internet with their smartphone. In my topic, the aim is to focus on the usage of mobile internet banking, especially on smartphone.

1.4 Key concepts

The following list of key concepts would describe the key points in the research. There are brief descriptions for each key concept in this chapter and further detail in theory framework section.

**Smartphone:** A term describes a group of mobile devices that are capable of performing advanced computing and connectivity beyond feature phone. Smartphone uses a complete operating system (OS) software as their basis to provide an interface and platform for application developers. (Phonescoop)

**Operating System (OS):** A core software that controls the basis of the electronic device. In this research, OS refers to the core software that controls the basis operation of smartphone. Popular OS for smartphone include Google AndroidOS and Apple iOS. (PhoneScoop)

**Application (App):** A software program run based on OS that provide specific functionality. A phone may contain many different apps. Apps are built-in or available to download from application stores. Smartphone allows users to download and install more powerful and advanced apps than feature phone. (PhoneScoop)

**Mobile Banking:** A banking system that allows users to access their bank accounts via mobile devices. Early offered mobile banking was SMS banking. However, since the
rapid growth of smartphone, mobile banking can be developed as specialized apps and mobile browsers. This research focuses solely on the development of mobile banking apps instead of SMS banking. (Duggal, 2013)

**M-payment**: Mobile payment or m-payment is another type of payment, which uses mobile phone to perform a payment instead of cash, checks or credit cards (Mashable). Mobile payment and mobile banking are not the same but share many common features. Nowadays, many banks are trying to integrate M-payment service within their mobile banking apps.

**Remote deposit capture (RDC)**: RDC is a service that allows users to scan or capture images of checks/or ACH-data and send it to the bank for clearing. Bank will deposit money to customer's account after the clearing process completed (Remote Deposit Capture). The RDC service is integrated in some mobile banking services, which allows customers to capture or scan checks with camera on their smartphones or tablets. The mobile banking apps will proceed the image to the core banking system for further processes.
2 Mobile banking

The term mobile banking refers to the use of mobile device to access bank account and perform online banking tasks such as checking balances, transferring funds, bill payments etc. (Duggal, 2013)

Mobile banking functionality can be divided into three main areas: informational functions, transactional functions and Service, Marketing & Acquisition. (Pegueros, 2014)

Informational area includes functions of obtaining information from bank account such as account balance, transaction history, loan, mortgage and credit information. Transactional services consist of money transfers, bill payments and remote deposit capture. Some banks also include the function of purchase of prepaid subscription in their mobile banking services. Service features serve to improve customer experience, including contact options, frequently asked questions (FAQ), help information, alerts and renewal notifications, etc. Marketing & Acquisition features contain special offers, coupon, new product information, advertising, customer research, etc. (Pegueros, 2014)

The following sub-sections contain discussion about different theories related to the development of mobile banking and different mobile banking services available, including SMS banking, mobile web and mobile banking apps.

2.1 Mobile banking segment

Segmentation of mobile banking market can show a clear overview of which target group both banks and credit unions should focus when developing their mobile banking strategies. This chapter will provide a brief explanation on different on different mobile banking segments.

The following chart illustrates the segmentation of mobile banking adoption based on age factor, conducted by Cognizant in collaboration with Monitise.
The study conducted by Cognizant has shown that the major users of mobile banking are young adult and adult people from 18-44. These groups have high need of using banking activities and easy to adapt to new technology.

The following chart illustrates another segmentation method of mobile banking, conducted by Cognizant, based on preferred mobile banking mode.

The study has point out the current trend of mobile banking. Consumers prefer using the specific smartphone apps to do mobile banking. SMS/Text banking is only used only by a small group of customers. Since more banks have developed their own mobile banking apps, the use of mobile banking website segment is on the move to smartphone apps segment.

2.2 Mobile banking vs Traditional banking

Whenever the new things come, the old will reduce in number. The modern mobile banking is new generation of online banking, and is set to reduce traditional banking. According to James DeBello, CEO and president of Mitek, mobile banking is going to
replace traditional banking. New segments of customers called “mobile first” and “mo-
bile only” are new phenomenon of the market. The increase of smartphone users,
younger generation is coming to the labor forces and new technology that allows users
to perform almost all banking routines only using smartphones and tablets; they are
coming closer to reality. (Groenfeldt, 2014)

A comparison between traditional banking and mobile banking is described below.

Traditional banking
- ATM machines works 24/7 unless they are out of service.
- The interaction with bank employees, bank managers or tellers, is the must.
- Security is guaranteed since customers know that their money have been depos-
ited safely to the bank.
- Camera surveillances and on-duty guards ensure the safety of customers.
  (Financial Web)

Mobile banking
- Accessibility is not limited as long as the customers have internet connection on
  their smartphones and tablets.
- A banking activity can be performed within a few minutes.
- Efficiency is the strength of mobile banking. Almost all daily financial tasks,
such as checking balance, bill payments and money transfers, can be performed
via mobile banking as long as the customers have their smartphone and internet
connection.
- For bank side, mobile banking reduces greatly cost and time for each transac-
tion performed via mobile channel. (Financial Web)
2.3 Risks and problems of mobile banking

Mobile banking, except SMS banking, shares many common threats with internet banking. The use of internet connection to connect users and bank system always contain many threats. According to Annetta Cortez in the book “The Power of Mobile Banking”, the following threats are worth of reviewing.

- Phishing: a fake link or request that hackers send to users in order to steal login credentials.
- Identity theft: it usually take place after phishing, the hacker use the stolen login credentials to steal identity of users.
- Keylogging: the device will record what is being typed. This threat is familiar with internet banking but less harmful to mobile banking. However, a malicious app can create similar threat to users.
- Pharming: the hackers hijack bank URL to a fake site in order to steal login credentials. It appears to be threat to both online banking and mobile web banking.
- Malware: any of the previous threats can be considered as malware. It is the use of illegal program to gain advantage of security vulnerabilities for illegal use. The most common type of this threat in case of mobile banking is the use of SMS Trojan.
- SMS vulnerabilities: this threat is part of malware risk. The most common hack types are redirection, hijacking and spoofing.
- Malicious applications: the malicious applications are the carrier of malware. It is the mechanisms to deliver malware to user’s device. In case of mobile banking, hackers usually use fake apps to deliver malware to user’s device.
- Privacy violations: the common issue of this threat in case of mobile banking is that users cross the border with their devices, which contain their information. Some countries have laws that restrict the porting of customer information.
- Loss or theft: it is the biggest, the most common and the most frequent threat than any other threats. The loss or theft of mobile device is not simply the loss of the device. Many people tend to save their personal information, including username, password, credit card number and identity in their mobile devices. The risk of leaking personal information is even more harmful than the loss of
device. It is highly recommended that customers should protect their information carefully with high security layer. In case of loss of device, customers should perform remote factory reset as soon as possible.

- Hardware and OS vulnerabilities: this threat in mobile banking is similar to internet banking, which may occur when there are vulnerabilities within the operating system and hardware.
- Lack of maturity of antifraud tools and control: it is related to phishing threat. Some people have a point of view that phishing threat is caused by the lack of antifraud tools. (Cortez, 2014)

The harmful level of threats depends on which side the risks bearer in. In case of customers, the loss or theft of device is the biggest threat as mentioned above. If the customers have low security level with lots of personal information stored within the device and few knowledge of remote factory reset, they are having big trouble in case of loss or theft.

The loss or theft of device also brings trouble to banks since their customers may expect their banks to protect their information and property from the inherent threats. It leads to another difficulty for banks to balance between security and convenience. Current technology is not able to offer a win-win solution for both security and convenience. More security levels added to mobile banking service will reduce its convenience. The trade-offs between security and convenience must be put into consideration if banks want to offer mobile banking services on mass scale. In order to gain competitive advantages in the mobile banking market, all banks have to find a best solution to provide the most effective and the most convenient for their services. (Cortez, 2014)

2.4 SMS Banking

The earliest mobile banking service was offered via SMS message. Most banks all over the world offer this service to its customers; give them access to some selected banking services via SMS message (Duggal, 2013). In Vietnam, SMS banking is treated as a part of electronic transaction and acknowledged by the decree 35/2007/ND-CP.
SMS banking operates via push-and-pull messages. Push messages are those, which sent out from bank to customer’s mobile device without customer request for information. Typical push messages include marketing message or alert message related to customer’s bank account, a withdrawal or a payment from customer’s bank account. Another type of push message is One-time password (OTPs). As the name describes its features, the OTP expire after use or after its life cycle has expired. The OTP will be sent to customers’ phone number as request each time they login to their bank account via online or mobile banking.

Pull messages are sent from customers’ phone in order to make requests. Customers request can be initiated to obtain information or to perform a transaction. Customers usually need to follow a terminology, which is indicate by banks.

Figure 3: Design of SMS banking (Shetty, 2005)

Figure 3 illustrates two-way communication of the SMS banking system. The push SMS will flow from Core Banking Application to SMS Mobile Banking Application
then to Bulk SMS Service Provider and reach customer’s mobile phone via Wireless Carrier while the pull SMS will flow the opposite direction.

Figure 4: Example of Push and Pull message in SMS banking (Fifth Third Bank)
Figure 4 illustrates the pull SMS sent from customer’s mobile phone following a terminology and a push message respond from bank to customer’s mobile phone.

2.5 Mobile Web

The second option of mobile banking is mobile web. Mobile web banking is similar to online banking, which allow users to access their bank accounts via web browsers. Most banks now have their websites designed with Responsive Web Design (RWD), which provide optimal viewing experience when customers login to their bank account via mobile web browsers.

Mobile web had two phases in its development history. The earlier form of mobile web was technically limited in many aspects, such as lack of multiple windows, lack of JavaScript and cookies, high cost, low speed, etc. The later form was developed since the
widespread of smartphones. Current mobile web has overcome these difficulties and create more opportunities for bank to bring mobile web banking to more end-customers. The mobile web banking provide the same services as online banking, only the viewing experience may be different depend on whether the site is designed with RWD or not. Nevertheless, the interface of mobile web banking and online banking can be switched as user’s will. (InvestingAnswer).

![Figure 5: Combined view of Nordea Mobile Web Banking and Online Banking (Nordea Finland, 2014)](image)

Figure 3 demonstrates the interface of mobile web banking and online banking. The site designed with RWD which automatically switch to mobile web viewing when access from mobile web browsers and can be revert back to full site as customer’s will.

### 2.6 Mobile banking application

Mobile banking application is the third option of mobile banking and the main research objective of this thesis. The mobile banking apps allow customers to connect directly to the bank server via internet connection on mobile devices. The following
subsequent section will explain details about the development, functionality and benefit of mobile banking apps.

2.6.1 Development of mobile banking apps

Mobile banking apps has a short development history. Up until 2010, most mobile banking service was offered over SMS banking. Since 2010, with the success of iPhone and lightning growth of Google Android, more banks started adapting a new trend by launching mobile web based service and mobile banking apps.

According to a mini study by Mapa Research in 2012, upon a third of banks have their mobile detection on their main site. Among the result, 61 percent of the mobile optimized website has an option to download mobile banking apps. (Mapa Research, 2012)

In Vietnam, mobile banking apps have adapted widely by local and multinational banks. According to my own mini research on 44 local and multinational banks currently working in Vietnam, 26 out of 44 banks have their mobile banking apps available to download for customers on Google Play Store.

2.6.2 How mobile banking apps works

Mobile banking apps is specifically designed for smartphone and tablet, which run on OS. Mobile banking apps is able to download from application stores. Similar to online banking, mobile banking apps connect directly from customer’s device to bank server via internet connection, including Wi-Fi, 3G or data transfer, for complete banking functionality. (InvestingAnswer)

As mentioned under section 2, mobile banking apps are designed to improve customer experience in three key areas of mobile banking: informational functions, transactional functions and Service, Marketing & Acquisition. Within informational areas, customers can use mobile banking apps to login to their bank accounts and perform informa-
tional tasks such as checking balance, reviewing transaction history and credit information, etc. Under transactional areas, customers can perform money transfers, bill payments or remote deposit capture if the apps have this function.

The security matter raise a big dilemma for all kind of online banking, including mobile banking apps. In order to prevent fraud, thief and unauthorized access, each bank provides different banking protection methods to protect its customers. The most common method is to create additional security layer by using the Transaction Authentication Number (TAN) as an OTP along with user ID and default password to form a two-factor authentication. There are different methods to generate TAN such as security token, SMS, access code list, etc.

Figure 6: Two-factor authentication (Hong Kong Monetary Authority, 2012).

Figure 6 illustrates how most banks ensure banking security by using two-factor authentication. Take example of Nordea Finland Bank, the bank provide a customer a default user ID and an access code list to authenticate transaction whenever customers perform online transaction (Expat-Finland).
Figure 7: Technical description of Mobile Banking Apps (ASEE Mobile)

Figure 7 expresses the technical process of mobile banking apps, designed by ASEE Mobile. ASEE Mobile Corp. is a provider of mobile banking, mobile payment and mobile authentication for many banks in Europe. The banking application will send the request via internet to the provider server in demilitarized zone (DMZ). The server will proceed the request to the bank core system. The bank core system will respond to the request in the opposite direction.

### 2.6.3 Benefits of mobile banking apps

Benefit of mobile banking apps can be divided into two separate areas: benefit for customers and benefit for banks.

According to the International Data Corporation (IDC), there were total 281.5 million of smartphone sold during the first quarter of 2014 (International Data Corporation, 2014). The time spent on smartphone of customers also tends to increase. According to the research of Exact Target Company, smartphone users spend at least 3.3 hours per day on their device (ExactTarget, 2014). The high usage of smartphone provides an opportunity for mobile banking apps to bring more convenience to customers. The following chart, conducted by Future Foundation, in association with Monitise, listed out some advantage of mobile banking to customers.
As the chart illustrated, convenience, speed and ability to control emerges are key benefits of mobile banking, as well as mobile banking apps.

In case of benefits for banks, Deloitte Development LLC has listed out two key opportunities for bank when implement mobile banking.

- Improving operational efficiencies: transaction conducted through mobile channel has significantly lower cost than any other channels. Switching to mobile channel not only save millions dollar annually but also reduce dependency on branches and ATMs (Deloitte Development LLC, 2010).

- Increasing revenue: mobile banking can provides banks several direct and indirect opportunities for revenues growth. The following opportunities can be harnessed to increase revenue through mobile banking:
  - Expanding distribution and coverage models:
  - Monetizing the value of customers analytics
  - Delivering greater real-time access to product and services
  - Offering discount and purchasing incentives to bank customers
  - Conducting targeted marketing campaigns (Deloitte Development LLC, 2010)
2.6.4 Challenges and difficulties

Even though the mobile banking apps bring quite a lot of benefit for both customers and banks, there are still some challenges and difficulties during implementation process. The primary challenge of all mobile banking is the dilemma of security. According to a survey conducted by Monitise, the most common answer of respondents, who refuse to use mobile banking, is security (Monitise/ Future Foundation). Among those who use mobile banking, the security is also rated as highly important (Marous, 2013).

The security concerns are not only a barrier to the customers but also a dilemma for banks. The most challenging matter that many banks and credit unions meet when adopting mobile banking, as well as mobile banking apps, is how to balance between security and convenience. Customers expect convenience, as well as high security while these two factors are conflict each other. In order to increase security, multiple authentication processes are required, which reduces the convenience and vice versa (Marous, 2013).

In addition to the matter of security, there are sizeable groups of people who refuse to use mobile banking because of some remarkable reasons. According to a research conducted by Monitise, there is a significant group of people believe that phone should only be used for calling and texting, other modern features, including mobile banking, are unnecessary. Moreover, there is a sizable group of people prefer to do online banking via computer instead of smartphone and tablet. Another remarkable reason for not using mobile banking came from a group of people who believe that a sophisticated device is required to do mobile banking activities.
2.6.5 Customers awareness on mobile banking apps

As it mentioned in previous chapter, the security is the primary barrier of mobile banking apps on the way to approach customers. However, the customer's fear of security of mobile banking apps mostly comes from misunderstanding or lack of knowledge. According to a research conducted by Federal Reserve on usage of mobile banking and mobile payment by mobile phone type, 48 percent of smartphone users have used mobile banking but only 24 percent have used mobile payments. (Federal Reserve, 2014)

In fact, mobile banking apps are as safe as in-person banking and much more secure than online banking, which is performed via different browsers, due to several following reason. Tim Mathews, senior director of Symantec information protection team, has explained those reasons below. (Matthews, 2012).

- First, mobile banking app is built solely for its own bank services and connects directly from client devices to bank server without using any third-party browser. The bank have full control of security of its apps while using third-party browser, users are exposed to malware and man-in-the-middle attack. The truth is most of recent bank breaches caused by customers when they use infected computer to login to their
bank accounts or using their bank login credentials to login to fake bank website created by hackers in order to steal their login credentials.

- It raises a question by some customers that what would happen in case they have their phone stolen. However, mobile banking apps are all built to free download from Store and require login credentials each time client login. It reduces the threat of unauthorized access due to loss of phone. However, the customers still bear this threat if they store their login credentials within their mobile devices. Fortunately, users can track unauthorized transactional activities from other devices or internet banking and request temporary block on their accounts. For experienced users, they can perform remote factory reset to prevent thief from accessing their personal information in their devices.

- As mentioned above, both AndroidOS and iOS allow experienced users to perform factory reset from remote location if enable. It allows customers to clear all data, including text messages, apps, documents, etc. in their phone remotely in case they have their phone stolen. (Matthews, 2012)

Therefore, it is the responsibility of banks and credit unions to alter the customer perception on mobile banking apps as it mutually benefits for both side, customers and banks.

3 Mobile banking in Vietnam

Mobile banking has been adapted to Vietnamese market since 2008 with nine institutions was allowed to offer e-wallet services via internet and mobile devices. In 2012, this number has reached from nine institutions to 1.3 million organizations and nearly 16 million transactions were performed via this channel (Vietnamnews, 2013). This chapter will provide an overview of current Vietnamese market and its potential for local and international bank to develop mobile banking apps in Vietnam.
3.1 Vietnamese market at a glance

Vietnam locates in South East Asia region, with the population of 89.7 million, which makes Viet the 13th-most-populous country in world. Vietnamese population is one of young population structure countries with 58.7 percent of population are in working age and the average age is 27.4. In 2013, 32.19 percent of Vietnamese population lives in urban area while 67.81 percent of population lives in rural area. Vietnamese population is on the trend to move from rural area to urban area with the percentage of urban population increases each year (General Statistics Office of Vietnam).

In 2013, GDP of Vietnam was 171.4$ billion and GDP per capita were 1911$. Since 2010, Vietnam has shown the decrease in annual GDP growth rate from 6.4 percent in 2010 to 5.4 percent in 2013 (World Bank). Vietnam has been an agriculture country for years. Agriculture still contributes to a large part to the total GDP of Vietnam. In 2013, agriculture contributed 19.3 percent, industry contributed 38.5 percent and services contributed 42.2 percent to total GDP. Services became a major part of Vietnam GDP.

In the recent year, Vietnam witnesses an increase of banking usage. Even though trading in Vietnam still depends heavily on cash, banking usage has growth rapidly and on the way to replace cash usage. In 2011, up to 40 million ATM cards were issued (Thanh Thuong, 2012).

3.2 Regulation related to mobile banking in Vietnam

This section focus on applicable laws related to mobile banking in Vietnam. Currently, there is no specific law applied to mobile banking. Mobile banking is part of e-commerce and is regulated under Vietnamese laws of e-commerce, focus on e-commerce in banking activities. The decree no. 35/2007/ND-CP became regulations for banking e-transaction, including mobile banking in Vietnam.
Since Internet came to Vietnam in 1997, it started developing quickly and created new demand for electronic transactions. Under that circumstance, the Government of Vietnam issued law on e-transactions, no. 51/2005/QH11, to regulate transactions implemented by electronic means.

In 2007, the Government of Vietnam issued decree no. 35/2007/ND-CP at the proposal of the Governor of the State Bank of Vietnam, which regulated banking e-transactions. The decree no. 35/2007/ND-CP was issued pursuant to law no. 51/2005/QH1, which regulated e-transactions. Since then, e-transactions performed via mobile banking were part of banking e-transactions and have been regulated under decree no. 35/2007/ND-CP.

The decree no. 35/2007/ND-CP includes 5 chapters and 30 articles, which acted as guidelines to regulate banking e-transactions. According to the decree, banking e-transactions are defined as "transactions implemented by electronic means related to banking activities of banks and credit institutions, excluding those related to insurance of bills of exchange and other valuable papers", which are mentioned in Law on the State Bank of Vietnam, no. 01/1997/QH10, and Law on Credit Institutions, no. 02/1997/QH10. The requirements of participants in banking e-transactions, the responsibilities of participants, other details of banking e-documents, implementation of the decree and other issues related to banking e-transactions are referred in this decree. This decree acted as a guideline of banking e-transactions to any involved individual, organization and party under the coordination of The State Bank of Vietnam.

3.3 Current usage and customers behavior on mobile banking in Vietnam

Mobile banking came to Vietnamese market in 2010, 6 years after internet banking, and developed quickly. Currently, there are 32 banks in Vietnam offer mobile banking service for their customers. According to the statistical data of Smartlink card services joint stock Company, there are more than 3 million customers using mobile banking services. The number of transactions per month achieved approximately 14 to 15 million (Le Chi, 2014). With 22 percent of Vietnamese have bank accounts and 21 percent
of Vietnamese owned at least one smartphone; the demand of mobile banking in Vietnam is high (Linh Lan, 2013).

The target of mobile banking is young customers whose age from 18 to 34. This group is highly adaptive and easy to accept new technology. However, the current usage of mobile banking in Vietnam is below potential. According to a representative of Smartlink card services joint stock Company, the growth of mobile banking in Vietnam need more time to meet its demand because customers are still used to their familiar payment channels. Another difficulty many banks meet when they started providing mobile banking services is the payment habit of Vietnamese. The Vietnamese market depends heavily on cash payment with 70 percent of working age population are unaware of modern payment services (Vietnamnews, 2013). It is the responsibility of banks to switch customer behavior from cash transaction channels to non-cash transaction channels if they want to make mobile banking an effective communication channel between banks and customers (Le Chi, 2014). The security dilemma also raises a difficulty for most banks when they started offering mobile banking services. Vietnamese people prefer a simple way to access their bank accounts via mobile device but also want it to be secured in case of lost or stolen device. Most of mobile banking services available in Vietnam now are either lack of convenience or security, which hinder the potential of mobile banking.

3.4 Potential of developing mobile banking in Vietnam

The previous section already illustrates a picture of the current usage of mobile banking in Vietnam. This section will explain why Vietnam is a potential market for mobile banking to develop.

To begin with, the current usage of smartphone in Vietnam is very high. According to the newest Google backed-study, conducted by TNS market research Company, one out of three Vietnamese or 36 percent of Vietnamese population owned a smartphone. It reflects the high growth of smartphone users in Vietnam, especially in the young population group. Compare to last year, young population segment has increased from 27 to 58 percent of total smartphone users in Vietnam (Vietnamnews, 2014). As the
number of smartphone users increases rapidly each year, the demand of mobile banking usage also goes up as well, which make Vietnam become potential market for mobile banking to develop.

According to a representative of Maritime bank, Maritime has started offering mobile banking service for its customers since 2011. Currently, its mobile banking service is serving 30 percent of total customers and still increasing. Since its debut, Maritime Bank mobile banking service has shown impressive growth with 400 percent increase in the number of transaction and 600 percent in the total value of transactions (Khanh Nhi, Lan Nguyen, 2014).

The competition of mobile banking in Vietnam is going to be fierce in the future. The competition will not occur only between local banks but also foreign financial institutions and foreign banks will take part in the competition to meet the diversity of customer’s demands (Khanh Nhi, Lan Nguyen, 2014).

However, the growth of mobile banking in Vietnam is evaluated as below its potential. As section 3.3 already mentioned, the lack of awareness of mobile banking, the payment habit and the security dilemma are the difficulties, which all banks must overcome if they want to succeed with their mobile banking services in Vietnam.
4 Methodology

This chapter will explain the research methods applied in this thesis. The research questions have been demonstrated in the section 1.2. This chapter will focus on which research type and research methods are used to achieve the goals of this thesis. Data collection process and data analysis will also be explained within this chapter.

4.1 Research type

According Nills Roll-Hansen (Roll-Hansens, 2009), research can be classified into two type, basic (theoretical) research and applied (practical research) research depends on its purpose and scope. Theoretical research aim to study a phenomenon based on theories and hypotheses. In theoretical research, empirical data is not necessary. Data collection process depends heavily on studies of theories and hypotheses. The aim of theoretical research is to enhance knowledge. The result of theoretical research does not bring immediate commercial benefit but instead, set up a foundation for future practical research. Practical research aims to find a solution for a practical matter based on study on empirical data. Data collection process of practical research is performed mostly via surveys, questionnaires, interview observations and experiments. The result of practical research can bring immediate practical benefit or apply as guidelines for future use (Roll-Hansens, 2009).

This thesis will take a form of practical research because it illustrates the current usage of mobile banking apps in Vietnamese market. This thesis targets at studying customer behavior on mobile banking apps in order to find a potential development path for banks to approach their customers. The investigative subject of this thesis will be the end-users of different banks operating in Vietnam.

4.2 Research methods

This thesis will perform research using a combination of quantitative and qualitative research methods. The quantitative method will be the primary method to collect data while qualitative method will provide deeper understanding on customer expectation.
The quantitative method focuses on large-scale research using survey and questionnaire as tools to collect data. By conducting survey on a large group of respondent, the quantitative method provides researcher a comprehensive look on the current trend of target respondents (Creswell, 2002). Different from quantitative method, the qualitative method focuses on smaller group of respondent with deeper detail on particular field of information (Creswell, 2002). For a practical research, it requires both methods, quantitative and qualitative, to collect data for a practical analysis. Data collected by questionnaire and learning from article and studies will be analyzed sequentially altogether to provide reliable result. In this thesis, the qualitative research will only focus on desktop research.

Figure 10: Research methods using in this thesis

First, the literature review is used to set up a foundation for the quantitative method. A literature review allows access to prior articles and studies related to research topic. Data from prior articles and studies are indispensable for the research since it build up the basis for quantitative research method. Based on prior articles and studies, a questionnaire is designed to collect necessary data from respondent for the research. The literature event

The quantitative method takes a major role in this thesis. A questionnaire includes 16 question will be sent out to different type of people in Vietnam via social network,
email and forum to collect responses. The questionnaire will focus on the awareness of Vietnamese people about mobile banking apps regardless of place, age, gender or social class. The target of the questionnaire is to take an overview of how mobile banking apps approach different type of Vietnamese people.

4.3 Data collection

The major data collection method of this thesis is the questionnaire. The questionnaire is designed to target every people in Vietnam. The questionnaire aims to collect as many answers as possible to illustrate an overview of current usage of mobile banking apps in Vietnam. The questionnaire is spread out using social network such as Facebook and many forums that has the large number of active members.

The attachment no.3 will illustrate the structure of the questionnaire. In general, the questionnaire is designed containing 16 questions divided into five parts. The first part focuses on background information of respondents, including age group, current usage of banking services and current usage of smartphone. The first part targets at preparing a setup analysis for further questions. Following the end of the first part, respondent will be taken into the next part, which focuses on the awareness of respondent about mobile banking apps.

The second part of the questionnaire aims to collect answer from respondents about their awareness of mobile banking apps. Mobile banking apps are new concept to Vietnamese. The coverage of mobile banking apps is on the trend to increase but still below its potential. The second part targets at finding out whether the respondents are aware of mobile banking apps and the availability of them. Based on their answers in the second part, the respondent will be redirected the third part or the last part of the questionnaire.

The third part of the questionnaire is designed to analyze the current usage of mobile banking apps. Based on the previous part, if the respondents are aware of mobile banking apps, they will be redirected to the question which ask them whether they are using mobile banking apps or not. In case the respondents are not aware of mobile
banking apps, they will be redirected to the last part and skip the third part of questionnaire. Using the feature of redirecting question based on previous answer, the questionnaire eliminates the probability that respondents may guess their answers without understanding the questions and also avoiding the result become unbiased. There are three answer options of for the question which ask the respondent whether they are using mobile banking apps or not. It includes “using”, “never use before” and “used in the past but has stopped”. Each answer will redirect them to different outcomes. If the respondent’s answer is “using”, they will be asked which services of mobile banking apps they often use recently. In case their answer is “used in the past but has stopped”, they will be redirected to the question which ask them why they decide to stop using mobile banking apps. After that, the questionnaire will lead the respondents with their answer is either “using” or “used in the past but has stopped” to the fourth part. The fourth part of the questionnaire allows them to provide their own assessment of the quality of their mobile banking apps services.

The fourth part of the survey focus on the assessment of respondents about mobile banking apps service in general and the mobile banking apps they are currently using. There are five factors of mobile banking apps that respondent can assess, including interface, usability, registration process, security level and additional features. Respondent will assess the quality of their mobile banking apps service on the scale from one to five, with one is the worst and five is the best. Then, respondent will assess the importance of the five factors of mobile banking in general. Similar to the assessment of quality, the assessment of importance will be grade on a scale of five, with one is the least importance and five is the most importance.

The last part of the survey is about the free idea of respondent about possible improvement of mobile banking apps in Vietnam and about the questionnaire. Respondent can choose available improvement options and/or write their own idea about what should be improved about mobile banking apps service in Vietnam.
4.4 Data analysis

Data collected from the survey acted as primary data source. The webropol website provide necessary tools for data analysis. It allows researcher to interpret data, then categorize responses into different groups and compare the result between them. The literature review will be used as a basis to analyze the result collected from the survey. After the data has been analyzed carefully, the result will be export to excel file and transferred to the final report. The final result will be the basis for discussion part of the report.
5 Result

This chapter will explain the result collected from the quantitative research method, the survey. The following sub-section will explain the result one by one, starting with the background information then focus on the detail of the research.

As mentioned in the section 4.3, the questionnaire were spread to as many people as possible regardless of their background for two weeks. After two weeks, the total responses received are 159. The survey aimed to get more response, however, due to geographical matter, the survey can only use social network and forum as intermediaries, lack of direct contact. The total 159 responses make the result fairly accurate.

5.1 Background question

Background question includes question 1 to 4, which focus on background information of respondent. The first question focus on the age group of respondent. There are 6 age groups option: 18-24, 25-34, 35-44, 45-54, 55-70 and 70+. The figure below illustrate the demographical data of respondent.

![Age Group Distribution](image)

Figure 11: Age group distribution of respondent (n=158)
Most of respondents belonged to younger age groups with 64.56% of respondents belong to 18-24 group and 19.62% of respondents belonged to 25-34 group. The middle-age groups accounted for total 12.82% of total respondents with 6.33% belonged to group 35-44 and 6.33% belonged to group 45-54. The rest of respondents were in elder groups, make up the last 3.17% of total respondents.

The survey was spread mainly via social network, which made up the reason behind this result. It did not show only the demographical data but also illustrates the picture of social network users in Vietnam. Younger people are capable of using social network while the elders find it more difficult to adapt to the new trend.

The second question focus on whether the respondent have bank account. The result is illustrate in the chart below.

Figure 12: Percentage of bank account owner (n=158)

The result showed that up to 92.41% of total respondents had at least one bank account in active. Only 7.59% of total respondents still not open any bank account. The result of second question will act as the basis for deeper analysis in the later part of the survey.
The third question focuses on whether the respondent is using a smartphone. Smartphone is the most requirement for mobile banking apps.

Figure 13: Percentage of smartphone owner (n=158)

Figure 13 illustrates the percentage of smartphone owners of respondents participated in the survey. The smartphone users covered up to 91.14% of total respondent, which made result a bit over expectation. The rest 8.86% might still use feature phones for communication.

All smartphones require OS to run. The chart below illustrates the current usage of different OS of smartphone users in Vietnam.
The majority of smartphone users in Vietnam is using AndroidOS with total 85 out of 157 respondents are using AndroidOS smartphone. The second most popular OS of smartphone users in Vietnam is iOS. 55 out of 157 respondents are using iPhone. Apple iPhone become quite popular to Vietnamese customers. Other OS are not familiar with Vietnamese people. The diversity of AndroidOS make Android phone become most popular to Vietnamese customers.

The last question of the first part of the survey was designed to take an overview how Vietnamese people access their bank account. The figure below illustrates different available methods to access bank account in Vietnam.
Figure 15 shows how Vietnamese people access their bank account. The most common method is to use browsers in computer. There are 88 out of 158 response stated that they use Internet Banking via browser in computer to access their bank account. The second most common method is to check bank account via ATM with 72 out of 158 answer chose that option. It is notable that mobile banking apps stood at the third place with 44 selections. It is a positive sign that mobile banking apps is on the way to approach Vietnamese customers. Other notable methods are access via browser on smartphone/tablet and direct contact to bank branches. Nowadays, there are not many people using SMS or direct phone call to access bank account in Vietnam.

5.2 Awareness of mobile banking apps.

The second part of this survey aims to analyze the awareness of mobile banking apps in Vietnamese market. Question 6 in the survey target to understand whether respondents are aware of mobile banking apps.
Figure 16 and figure 17 illustrate the awareness of mobile banking apps among total respondents. The number of respondents who were aware of mobile banking apps accounted for 70.44% of total respondents. The rest 29.56% did not know about mobile
banking apps until they did the survey. Among those who were aware of mobile banking apps, younger respondents took a largest percentage. However, middle age and elder respondents still accounted for a significant percentage. The same went for those who were not aware of mobile banking apps.

Figure 18 will take a deep understanding among those who were aware of mobile banking apps.

![Bar Chart: How respondents know about mobile banking app](chart.png)

**Figure 18: How respondents know about mobile banking apps (n=112)**

Most of respondents knew about the availability of mobile banking apps via bank website, with 61 out of 112 responses chose that option. Other sources are newspaper, media, and recommendation from friends and bank employees. These are signs that most banks are able to introduce new technology of convenience to end-customers via their main websites.

Not all banks operating in Vietnam have mobile banking apps available for customers. Figure 19 will take an overview on whether customers were aware that the banks they are using have mobile banking apps available for customers or not.
Among those respondents who were aware of mobile banking apps, 76.79% are using banks which support mobile banking apps, 11.61% are using banks which have no mobile banking apps available for use, the rest 11.6% do not know whether their banks have mobile banking apps or not. The coverage of mobile banking apps among those respondents was large. It reflects the fact that more Vietnamese people are aware of mobile banking nowadays.

### 5.3 Current usage of mobile banking apps

This section will focus on the current usage of mobile banking apps among those respondents who were aware of mobile banking apps. The next figure illustrates the current usage of mobile banking apps among those respondents of the survey.
Figure 20: Current usage of mobile banking apps (n=86)

Figure 20 took an overview of current usage of mobile banking apps. According to the result, 66.28% of the respondents who were aware of mobile banking apps and had their banks support mobile banking apps service are currently using it. The next 22.09% of them never used mobile banking apps before and 11.63% has stopped using mobile banking apps. For those respondents who are using mobile banking apps, this research shows a deeper analysis on their background information on the following charts.
According to the result, respondents whose age from 18-24 accounted for 62.5% of the group, respondents age from 25-34 constituted 26.79%. The rest respondents are from 35 to 54 years old. A notable point in the result is that there is no response from respondents whose age from 55. The result reflects quite accurate the current usage of mobile banking apps in Vietnam. People from generation Y (born between 1977 and 1994) and later find it easier to adapt to new technology than previous generations.

The next figure shows another analysis of respondents who are currently using mobile banking apps based on the smartphone OS they are using.
Figure 22: Smartphone OS available for using mobile banking apps (n=66)

Figure 22 illustrates which OS have mobile banking apps available to download, based on responses of respondents who have experience in using mobile banking apps. According the result, AndroidOS and iOS have most mobile banking apps service available. Other operating systems cannot compete with AndroidOS and iOS. In fact, not many banks decide to develop mobile banking apps service for other operating systems rather than AndroidOS and iOS.

Among those respondent who are using mobile banking apps, the following figure will take an overview on what service they prefer using most.
Figure 23: Preferable service of mobile banking apps (n=57)

Figure 23 pointed out some services available of mobile banking apps in Vietnam. It is clear that basic features such as checking balance and transfer are mostly used. Other remarkable features are bill payment and purchase of prepaid mobile credit. The rest features still stay low. It reflects the fact that Vietnamese customers are not acquainted with other services of mobile banking apps rather than the very basic features such as checking balance and making transfer.

Figure 20 demonstrates that 11.63% of respondents who stopped using mobile banking apps service. The following chart illustrates some reasons behind their decision.
Even though not many respondents decided to stop using mobile banking apps, it should be noted that if banks do not try to improve their mobile banking apps services, there still have a chance they can lose more customers in this transactional channel. The most common reason for stopping using mobile banking apps is the drop of demand. Other reasons mentioned in the survey such as security matter and not convenient mostly caused by mistaken perception of customers about mobile banking apps.

For those respondents who have not used mobile banking before, the following chart will illustrate whether they are willing to use it in the future.
According to the result, there were up to 80.43% of the respondents who are willing to use mobile banking apps in the future. It is promising result for the development of mobile banking apps in Vietnam. It reflects the fact that Vietnamese people are easy to accept new things. However, banks should take into consideration that Vietnamese may prefer new technology but can easily change to another trend.

### 5.4 Respondent assessment on mobile banking

This part of the survey will focus on respondent assessment on different features of mobile banking apps. The first question of this part will concentrate of the group of respondents who have experience in using mobile banking apps.
Figure 26 reflects respondent assessment on mobile banking apps that they are currently using. On a scale of five, which one is the worst and five is the best, respondents did the assessment on the quality of five basic features of their mobile banking apps service they are using. Five basic assessments features include interface, usability, registration process, security and additional services. Based on the result, it was clear that the quality of mobile banking apps in Vietnam does not fully meet customer expectation on all five features. However, the good point in the result that is two most important features, usability and security matter, has adequately high score.

The following figures will illustrate the respondent assessment on the importance of these five features mentioned above.
According to the result, security matter is the most important feature among all other features. The average score of security feature is 4.70 out of 5 point. The second most important point in the result is the usability. Because mobile banking apps are new concept to Vietnamese people, they prefer an easy-to-use service. Usability score 4.45 out of 5 point has reflected the fact mentioned above. Another remarkable feature in the result is the registration process. According the result, which will be mentioned in section 5.5, some banks in Vietnam require their customers to finish a long and complex registration process before they can start using mobile banking apps. It leads to the point that the registration process scored 4.09 in the survey. Other points including interface and additional features were assessed as adequate importance; with the results are 3.88 and 3.52.

5.5 Possible improvement for mobile banking apps in Vietnam

This chapter will provide an overview on which improvements are possible for mobile banking apps in Vietnam, based on the respondent suggestion. The result in the previous section has shown that mobile banking apps in Vietnam still has a large gap be-
between customer expectation and service quality. There are many rooms for improvement for mobile banking apps. The next figure will illustrate some customer expectation on mobile banking apps.

Figure 28: Possible improvement for mobile banking apps (n=159)

Figure 28 has illustrated some possible improvements for mobile banking apps in Vietnam based on respondent suggestions. Among those improvements, security matter received most selections. It also reflects the fact that security matter of mobile banking apps in Vietnam does not fully satisfy customer expectation even though it is the most important factor. Other remarkable points in the result consist of usability and registration process. Many Vietnamese people believe that mobile banking apps in Vietnam are quite complex and difficult to use. In order to increase usage of mobile banking apps, improving usability could be an option to encourage customers to switch from traditional transaction channels to modern transaction channel. Another possible improvement that respondents suggest is the registration process. Some banks in Vietnam require their customers to follow long and hassle registration process before they can start using mobile banking apps. It makes a negative impression on customers.
and discourages them to start using mobile banking apps. Other possible improvements include adding more additional features and better interface. These improvements are possible but not necessary for mobile banking apps in Vietnam now.

The last question of the survey is an open question about mobile banking apps and the survey. There were total 36 responses for this question. Most of responses were comments about the usefulness of the survey and mobile banking apps. Some responses were the evaluation of respondents about mobile banking apps. Some notable responses were improvement suggestion for mobile banking apps.
6 Discussion

The discussion chapter focuses on the validity and reliability of the research, what achievement this research has acquired so far. This study is a practical research, its achievements earned from the result has to be able to apply for reality. It will contain reflection on the research result, possible improvement and recommendation and evaluation of personal learning of the author.

6.1 Main findings

The main findings of this research is to find answer for these IQs mentioned in section 1.2, including.

1. How many bank in Vietnam have their mobile banking apps for smartphone?
2. How many percent of Vietnamese people has bank account and currently using mobile banking apps now?
3. How Vietnamese customers perceive and approach mobile banking apps in the future?
4. What are their expectations on mobile banking apps?
5. What are the challenges of mobile banking apps in Vietnam?

For the first question, the literature review has achieved the goal by finding the number of banks have mobile banking apps available for customers in Vietnam. Currently, 32 banks offer mobile banking apps services for smartphone, most of them develop mobile banking apps for iOS and Android. Other OS are still limited because their market shares are much lower compared to iOS and AndroidOS.

The second question is the responsibility of the survey. The survey has received total 159 responses, which made it moderately accurate for the research. However, the result could only be applied for residents in urban areas. Due to geographical difficulty, the survey was spread only using social network. Residents from rural area might not have chance to do the survey. According to the result, younger people find it easier to adapt to new technology than middle-aged ones and elder ones.
The third question is also a part of the survey. According to the survey result mentioned in section 5.3, the majority of respondents are willing to continue using mobile banking apps or start using mobile banking apps in the future. It reflects the fact that Vietnamese market is a potential market for mobile banking apps. However, it will be a long and hard way for banks to encourage their customers to switch from traditional transaction channels to modern transaction channels.

The fourth and fifth question was answered in section 5.4 and 5.5. Respondent assessment was in section 5.4 and suggestion for possible improvement was in section 5.5. Similar to other researches mentioned in the literature review, customer expectation on mobile banking and mobile banking apps are difficult to satisfy. The perception of customer on mobile banking and mobile banking apps are more different from developer side. Customers expect mobile banking, including mobile banking apps, to be both secure and easy-to-use. However, it raises many difficulties for developers since there is no win-win solution for both convenience and security. In order to increase security, convenience will reduce and vice versa. It makes a main barrier that prevents customers from adapting new technology.

6.2 Suggestion for development

Based on the result collected from the survey, these following suggestions can be applied for further development of mobile banking apps in Vietnam.

To begin with, the first suggestion for possible improvement is the convenience and usability of mobile banking apps. Improve the usability option received second most votes for improvement. In fact, some banks have developed their mobile banking apps in a quite complex way, which creates difficulties for new users, especially middle-aged users and older people.

Furthermore, the registration process received nearly equivalent votes for improvement compare to the usability option. Respondents reported that some bank require a long and hassle registration process before they can start using mobile banking apps.
The long and hassle registration process can become an obstacle for mobile banking apps on its way to approach new users.

Even though the security matter received most votes for improvement, the security level of mobile banking apps in Vietnam is more secure than what customers believe it could be. Each mobile banking app was developed specifically by the bank itself. All banks currently use two-factor authentication for every transaction performed using mobile banking. The most suitable solution for security matter is to educate users to be careful with their confidential information instead of improving technical security level. Under the current circumstances, improving technical security level will reduce the convenience and usability, which contradict to the previous improvement.

Other suggestions received from the survey such as improving interface and adding additional features are possible but not make any significant change for mobile banking apps.

6.3 Limitations

Every research bears some certain limitations. This section will explain some particular limitations of this research.

Firstly, this research focuses on mobile banking apps. Mobile banking app is a part of mobile banking. The earliest form of mobile banking is SMS banking, which developed many years ago. These later forms of mobile banking are mobile web banking and mobile banking apps. Among those two, mobile banking apps had the shortest development history. Because of the short development history, most of reliable sources of information are e-sources. There are very few books about mobile banking, especially mobile banking apps, available for reference. The first and only book that the author can use for reference in HAAGA-HELIA library was not available until October 2014. Lacking of reference books and sources reduce the literature review reliability.
Moreover, the total respondents of the survey were 159, which is kindly lower than expectation. The low number of respondents reduced the accuracy of the result. In addition, due to geographical difficulty, the survey can only spread via social network using internet connection. The majority of people using social network frequently in Vietnam belongs to younger age group. The survey aimed to target all Vietnamese people, regardless of gender, age, social class and income. However, the method of spreading the survey has prevented the survey to reach all type of Vietnamese people.

6.4 Reliability and validity

The reliability is the indispensable requirement of any research. According to Colin Phelan & Julie Wren (2005), **reliability** is defined as

“The degree to which an assessment tool produces stable and consistent results”

The reliability is the aspect which measure the consistency and stability of the result yielded from the study. In the same article, Colin Phelan & Julie Wren also define the **validity** as:

“Validity refers to how well a test measures what it is purported to measure.”

The validity is other aspect which measure the accuracy of the result yielded from a study.

The reliability of the study was explained in chapter fourth, methodology. The research type, research methods, data collection and data analysis were explained clearly and thoroughly. The reasons behind those chosen research type and research methods were described clearly as well. The data collection stage and data analysis stage were demonstrated comprehensively, including the target group, data collection method and data analysis tools used in the study. All stages of the study were demonstrated consequently in order to assure the similar result, or with slight differences, would come out in case similar studies are conducted in the future. Therefore, the reliability and consistency of the result are guaranteed.

Primary data of the study came from the survey. The survey was conducted carefully using the online platform. The target respondents are all people living in Vietnam, re-
Regardless of age, income and social class. The questions were designed carefully to ensure the accuracy of the responses and minimize unintentional respondent errors. Secondary data of the study came from reliable sources. Even though this study depended heavily on e-source because of the shortage of reference books, the sources were checked many times before the information was extracted and quoted in order to ensure the validity of the study. All the extracted and quoted information were referenced and cited carefully in order to ensure that every readers are able to trace back to original sources. Therefore, the validity of this study can be guaranteed.

6.5 Further development

Mobile banking apps in Vietnam is on the early stage. The current usage of mobile banking apps is mostly from young people. This research can be a foundation for further research on the potential of mobile banking apps. Based on the literature review of this research; further researches can use it to set a direction for their studies.

Each bank may have developed its own research on their customers, this research can act as guideline for further related researches. Based on the result of this research, banks may find possible improvement for their mobile banking apps to meet customer satisfaction and increase the number of new users. This thesis would be more valuable if it could find cooperation from different banks have their mobile banking apps service available.

This thesis was limited because of geographical difficulty and lack of funding and sponsor. Further researches can resolve the problem if they can be performed in Vietnam with sufficient funding resources.

6.6 Personal learning

This thesis started in January. It took 11 months from the beginning to the completion. The most difficult part of the thesis is the literature review. Lacking of reference books in the beginning prevented this thesis from advancing quickly. The majority of information sources are e-sources, which required lots of effort to validate the information.
Firstly, the author had to define different terms related to mobile banking apps. The mobile banking app is part of mobile banking. Mobile banking is a new term that came along with the birth of smartphone. Before that, the only banking service available through feature phone was SMS banking. After the rise of smartphone, the term mobile banking was used to define banking services running on mobile device, including SMS banking, mobile web banking and mobile banking apps. However, customers usually think mobile banking as mobile web banking and mobile banking apps only. It took lots of time finding and reading different sources from the internet and validating their reliability before putting it to the thesis. During the process, the author learnt different tips about finding information on the internet and validating the reliability of the sources.

Next, the author went deeper into different types of mobile banking and its own history. For SMS banking, it has longer development history and its mode of operation did not change a lot since it started coming to the market. It was not difficult to go deeper into its history and mode of operation. Nevertheless, mobile web banking and mobile banking apps has a very short development history and their mode of operation is continuously changing each day. Both mobile banking apps and mobile web banking are parts of the next generation of internet banking.

For mobile web banking, the author met many difficulties in finding the suitable sources that provide sufficient information about its history and mode of operation. The mobile web banking and internet banking are similar in almost aspect, except the interface. The author has learnt to differentiate between mobile web banking and internet banking. During the process, the author also learnt different technical terms related to mobile banking and the mode of operation of both internet banking and mobile web banking.

For mobile banking apps, it was even more difficult to find the suitable sources. Mobile banking apps was usually mentioned as part of mobile banking and very few articles wrote about mobile banking apps specifically. The author had to learn to extract different information about mobile banking apps from many sources about mobile banking.
banking and then group it together. The mode of operation of mobile banking apps is also different from mobile web banking. The only similarity between both of them is that they use internet connection. In order to understand mobile banking apps, the author had to learn lots of technical knowledge about related aspect such as OS, Android, iPhone.

Another obstacle came up when the author intend to find a bank to support the thesis. Unfortunately, most of banks in Vietnam have strict policy when the author mentioned about the thesis topic. Some small banks were willing to help but they had no mobile banking apps service available. However, the author finally found a way to turn the thesis to another direction that required no help from banks.

During the survey stage, the author has foreseen the limitation of the spreading method. Using social network to spread the survey, which is only favorable for young people, would limit the number of respondents. The result has shown the fact that people from middle-aged group and old group were limited. However, it was unavoidable due to geographical difficulty and lack of funding.

Finally yet importantly, throughout the research process, the author has learnt a lot from the survey and literature review. The survey result has provided the author the perspective of Vietnamese people about mobile banking and mobile banking apps. This research can be used as reference for the author in the future if the author can find a career in the banking industry.
References


Potential of developing and using mobile banking apps in Vietnam  

Nhat Nguyen
Survey on current usage of mobile banking apps on smartphone

I am Nguyen Huy Nhat, student of HAAGA-HELIA University of Applied Sciences, Helsinki, Finland. I am conducting a survey on “the current usage of mobile banking apps on smartphone” for thesis. The survey includes 15 question and do not take more than 2 minutes. Please help me filling the survey.

All information provided for this survey is confidential and never use for other purpose. Thank your for your support.

1. Your age group *
   - 18-24
   - 25-34
   - 35-44
   - 45-54
   - 55-70
   - 70+

2. Are you opening a bank account? *
3. Are you using smartphone? *
   - Yes
   - No

4. What is the OS of your smartphone?
   - iOS
   - Android
   - Windows Phone
   - Blackberry
     - Other
   -

5. Which channel do you often use to access your bank account? *
   - ATM
   - Bank branch
   - Browser on computer (Internet Explorer, Firefox, Chrome, etc.)
   - Direct phone call
   - SMS
   - Browser on tablet/smartphone
   - Mobile banking apps
     - Other
   -
Mobile banking apps is application on smartphone/tablet. Mobile banking apps is offered by its own bank. It is available for users to download and install on smartphone/tablet. Mobile banking apps use internet connection (3G, GPRS, and Wi-Fi) to connect directly to the bank system without using browser (Internet Explorer, Firefox, Chrome...).

6. Are you aware of mobile banking apps? *
   ○ Yes
   ○ No

7. How do you know about mobile banking apps? *
   □ Bank website
   □ Friend’s recommendation
   □ Bank employee’s recommendation
   □ Media/Newspaper
   □ Other
   □ ________________________________

8. Does your bank offer mobile banking apps service? *
   ○ Yes
   ○ No
   ○ I don’t know

9. Are you using mobile banking apps? *
   ○ Currently using
   ○ Never use
   ○ Used but stopped
10. If you never use mobile banking apps before, do you intend to use it in the future? *

☐ Yes
☐ No

11. Why did you stop using mobile banking apps? *

☐ Rarely use
☐ Security matter
☐ Not necessary for phone
☐ Registration matter
☐ Complex interface
☐ Difficult to use
☐ Only few services available
☐ Cost
☐ Not convenient
☐ Do not like
☐ Prefer online banking
☐ Other
☐ ________________________________

12. Which services of mobile banking apps do you usually use? *

☐ Checking balance
☐ Transfer
☐ Open saving account
☐ Cash deposit
☐ Purchase prepaid mobile credit
☐ Bill payment
☐ Checking exchange rate
Finding ATMs and bank branches
Block card
Setup card settings
Call customer services
Checking promotion campaign
Other

13. Please assess the quality of mobile banking apps service you are using based on these following aspects. *

<table>
<thead>
<tr>
<th></th>
<th>Very poor</th>
<th>Poor</th>
<th>Average</th>
<th>Good</th>
<th>Very good</th>
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<td>o</td>
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<td>Registration process</td>
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</tr>
<tr>
<td>Additional services</td>
<td></td>
<td>o</td>
<td>o</td>
<td>o</td>
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</table>

14. Please assess these following aspects based on the importance. (1: Least important - 5: Most important) *

<table>
<thead>
<tr>
<th></th>
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</tr>
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<tbody>
<tr>
<td>Interface</td>
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<td>o o o o o</td>
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<tr>
<td>Security level</td>
<td>o o o o o</td>
</tr>
</tbody>
</table>
15. Which improvement do you think is necessary for mobile banking apps in Vietnam? *

- [ ] Increase security level
- [ ] Simplify registration process
- [ ] Add more additional services
- [ ] Better interface
- [ ] Simplify usability
- Other
  
  [ ]

16. Please give some comment about this survey

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________
Attachment 3. Survey structure
Attachment 4. Survey result *

* Note: The questions are in English but the result are in Vietnamese, please collate the attachment 2 for details)

Survey on current usage of mobile banking apps on smartphone

1. Your age group
Number of respondents: 157

2. Are you opening a bank account?
Number of respondents: 157

3. Are you using smartphone?
Number of respondents: 157
4. What is the OS of your mobile banking apps?
Number of respondents: 156

5. Which channel do you often use to access your bank account?
Number of respondents: 158
6. Are you aware of mobile banking apps?
Number of respondents: 158

7. How do you know about mobile banking apps?
Number of respondents: 111

8. Does your bank offer mobile banking apps service?
Number of respondents: 111

9. Are you currently using mobile banking apps
Number of respondents: 85
10. If you never use mobile banking apps before, do you intend to use it in the future?

Number of respondents: 92

11. Why did you stop using mobile banking apps?

Number of respondents: 9
12. Which services of mobile banking apps do you usually use?
Number of respondents: 57
13. Please assess the quality of mobile banking apps service you are using based on these following aspects.

Number of respondents: 66

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<th>Poor</th>
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<td><strong>330</strong></td>
<td><strong>3.71</strong></td>
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</table>
14. Please assess these following aspects based on the importance. (1: Least important - 5: Most important)

Number of respondents: 140

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15. Which improvement do you think is necessary for mobile banking apps in Vietnam?

Number of respondents: 158