THE INTENTION TO USE A MOBILE BANKING APPLICATION OF A GROUP OF ELDERLY USER IN THAILAND

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ABSTRACT

The purpose of this study is to understand the intention to use for the elderly user in Thailand toward the mobile banking application and to apply the result from the research and recommend the appropriate way of communication to increase the number of the user. Hypotheses were test via online survey and using SPSS to analysis all the data.

The result of this study found that elderly user have concern over Perceived ease of use, Perceived usefulness and Security and privacy. Recommendation have been provided in the conclusion part.

KEY WORDS: Technology Acceptance Model (TAM)/ Mobile Banking Application/ Elderly Mobile User

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CHAPTER I
INTRODUCTION

We have to admit that nowadays, we cannot live more than a day without our smartphone. Our behavior has changed a lot lately because of the rapid change in technology. It is an era that people can easily access anything, anywhere and every time. According to the National Statistical Office of Thailand in 2017, the number of smartphone users in Thailand is estimated to reach 30 million by 2020 (Statista, 2017). So it made digital banking became an incredibly valuable platform because now most of the customers prefer to use the smartphone to do a banking activity due to the convenience. In Thailand, the number of customers that shifted from traditional banking to a digital platform is growing very fast over the past decade. This will continue to drive a transformation of the Thai banking system from "brick and mortar" to "digital". (W. Puriwat and S. Tripopsakul, 2017)

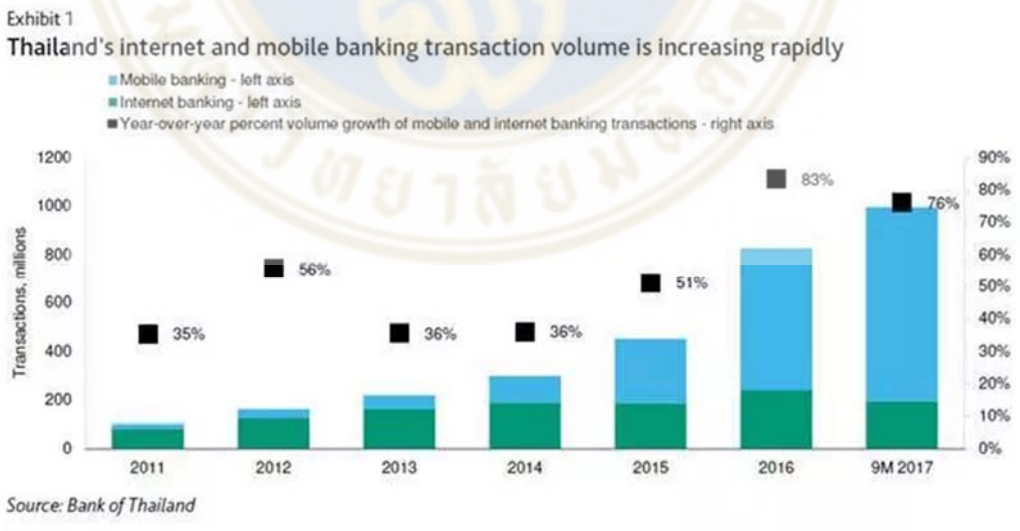

Figure 1.1 The volume of internet and mobile banking transactions

However, even Thailand has a large number of "Internet" and "Social Media" user, but more than 70% of Thais population is still cannot access the internet properly.

Partly from the economic and political reason, there is another crucial reason that makes these group of people choose not to use the online platform. Even they have the potential to access all the resources but not willing to open their mind - especially "older groups" that are aged 50 years or older.

Additionally, according to the report of the National Economic and Social Development Board (NESD), Thailand will become a full-fledged aging society in 2021. It will be 56.3 percent of the total aged population. Moreover, even this group of people have more banking activities than the rest of the customer. However, for some reason, they refuse to use the mobile banking application or any online platform and prefer to use the traditional way of banking.

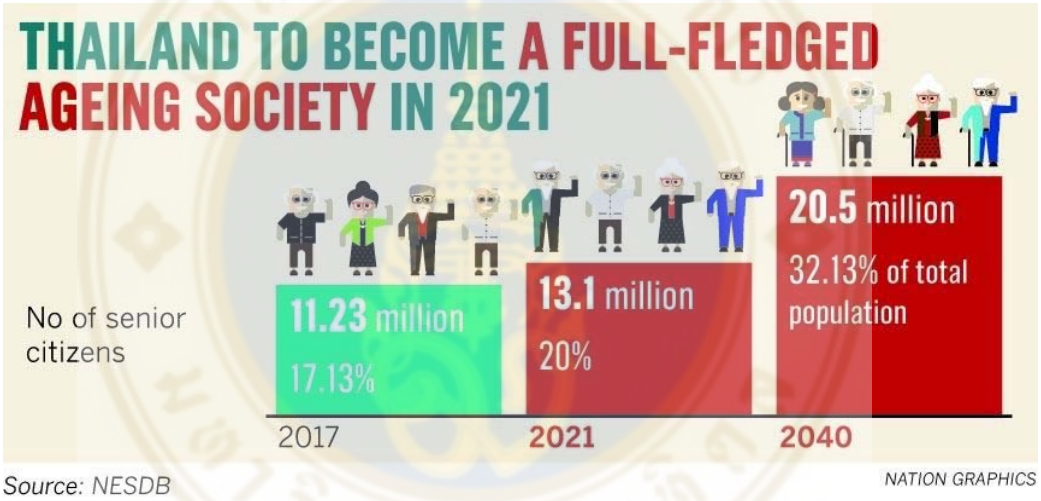

Figure 1.2 Growing of the Aging Society in Thailand

So considering all the information above, we can see that the elderly group is a niche market and have a high potential to be a new mobile banking user.

Figure 1.3 Mobile banking application ranking in Thailand

Source: Bank of Thailand (2017)

From figure 1.3, it is shown that Kasikornthai Bank is a leader in the mobile banking application market. In order to gain more customer, the rest of the banks need to boost up the game too. Krungthai Bank recently launched "Krungthai NEXT" a re-new version of their mobile banking application to supporting the government's 4.0 policy and also to pursue the goal of more market share. In my opinion, this is strong support that Krungthai bank should use this opportunity to learn more about the elderly group. Instead of competing in the mass market with the big fish in the market, Krungthai bank should focus more and find out the concern of this elderly group in order to gain more profit and market share from the leader.

1.1 Problem Statement

As the state-owned bank that serves the needs of the public, Krungthai Bank has lots of customer segments. With the trusted image, the elderly (aged 50 years or older) often choose to open the account with us. Moreover, with this benefit, it seems that we might be able to convince the elderly user to use our mobile application. However,

we still cannot be able to move them to use our mobile banking application anyway. Therefore, the purpose of this study is to understand the intention to use for the elderly user toward the mobile banking application.

1.2 Research Objectives

1. To understand the intention to use of Thai's banking customers (aged 50 years and above) toward the mobile banking application.

2. To apply the result from the research and recommend the appropriate way of communication to increase the user of Krungthai NEXT application.

1.3 Expected Benefits

To understand all the intention to use the target users and be able to convince them to use Krungthai NEXT application by creating the proper strategies or advertising campaign.

1.4 Scope of the study

The research will focus on the perception of the elderly user toward the mobile banking application by using the Technology Acceptance Model (TAM).

CHAPTER II
LITERATURE REVIEW

2.1 Technology acceptance model (TAM)

According to Glavee-Geo, Shaikh, and Karjaluoto (2017), one of the most well-known applied model of users' acceptance and usage of technology is the technology acceptance model (TAM) of Davis, Bagozzi, and Warshaw (1989). TAM is used to investigate how users come to accept and use technology. The TAM consists of two important independent variables; namely, perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness (PU) was defined as "the degree to which a person believes that using a particular system would enhance his or her job performance". Perceived ease of use (PEOU) refers to “the degree to which the prospective user expects the target system to be free of effort”.

Table 2.1 Summary of recent research studies on mobile banking with TAM

Quote	Factor	Reference (Adaptation)
Ease of use has a positive impact on the usefulness of virtual communities	Perceived usefulness/ Perceived Ease of Use	Hsu & Lu, (2007)
Studies related to the effects of perceived usefulness in the field of new technologies present different results.	Perceived usefulness	Pham & Ho, (2015)
Attitude can be defined as a multidimensional construct, consisting of three dimensions: cognitive (experience, beliefs, and opinions), effective or emotional (feelings, emotions and subjective evaluations) and a conative or behavioral dimension (intention to purchase, respect to purchase and response to rejection).	Perceived usefulness	Fishbein and Ajzen (1975)

Table 2.1 Summary of recent research studies on mobile banking with TAM (cont.)

Quote	Factor	Reference (Adaptation)
Social image is associated with factors such as respect, honor, status, reputation, credibility, competence, social connection, loyalty, trust, feeling proud/ashamed, etc.	Perceived Ease of Use	Bao et al., (2003)
Social image is capable of influencing the ease of use of advanced mobile services	Perceived Ease of Use	López-Nicolás, Molina-Castillo, & Bouwman (2008)

According to Legris, Ingham, and Collerette (2003), TAM examines the mediating role of perceived ease of use and perceived usefulness on the probability of system use. In the TAM model, PU and PEOU predict attitude and behavioral intention. Previous researches recommend that in order to provide better explanations of an individual's adoption intention and behavior, the extension of TAM with additional antecedents such as self-efficacy, institutional support, anxiety and voluntariness, and perceived mobility is necessary. Therefore, many mobile banking adoption studies extend or supplement the original TAM by including perceived trust and perceived risk. These two factors are added as many researchers are aware that technologies that are compatible with trustworthy, safe and secure and won't jeopardize the user's personal and financial information from being accessed by a third party. In the research combine these two factors into one factor and call it security and privacy.

2.1.1 Perceived usefulness

Perceived usefulness is defined as the extent to which the customer believes that mobile banking is more advantageous when compared to other banking channels, like ATM or phone banking, for conducting banking services. These benefits include allowing them to conduct banking activities more quickly, anytime, and anywhere. The other word is customers find out the mobile banking is useful and is "capable of being used advantageously" (Davis, 1989: 320).

H1: Perceived usefulness would positively affect the intention to use mobile banking in an elderly user.

2.1.2 Perceived ease of use

In 2011, Lin tested the PEOU and its influence on adoption and asserted that PEOU, in fact, has a significant effect on adoption or continuing to use mobile banking. Puschel et al. (2010) found that perceived ease of use (PEOU) influences attitude towards mobile banking and this influences adoption and behavioral intentions towards mobile banking besides continuing to use the service. This study hypothesizes that PEOU would have a direct relationship with perceived usefulness as well as the intention to use mobile banking services.

H2: PEOU would positively affect the perceived usefulness of mobile banking in an elderly user.

H3: PEOU would positively affect the intention to use mobile banking in an elderly user.

2.1.3 Security and Privacy

Security and privacy are defined as the user's relative confidence in the mobile banking service itself. The high security and privacy level are means that the user perceives the service as trustworthy. Eid (2011) found that perceived security risk and perceived privacy had a negative relationship with the trust of electronic commerce websites in Saudi Arabia. Eriksson, Kerem, and Nilsson (2005) have found trust has a positive effect on both perceived ease of use and perceived usefulness, in this study, it is hypothesized that security and privacy would affect perceived ease of use and perceived usefulness.

H4: Security and privacy would positively affect the perceived usefulness of mobile banking in an elderly user.

H5: Security and privacy would positively affect PEOU of mobile banking in an elderly user.

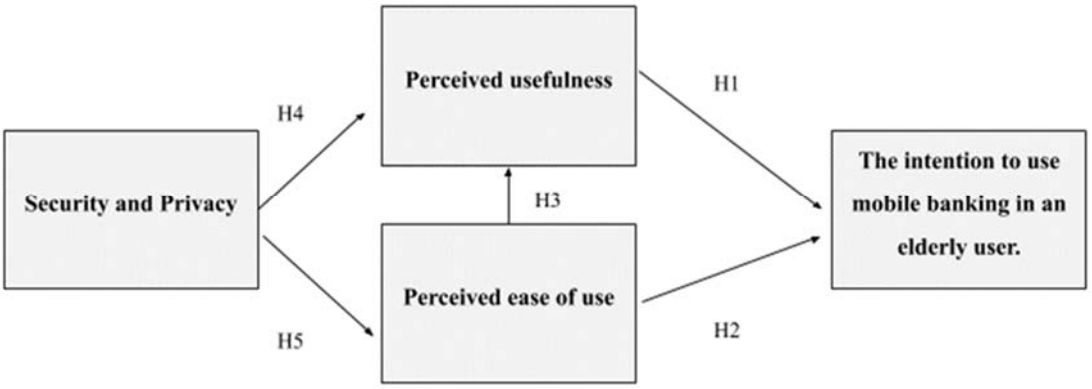

Figure 2.1 The research model

Based on the above discussions, Figure 2.1 illustrates the hypothesized relationships between the research model constructs.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research methods

The data will be collected via the online platform by using googleform.com in order to get the information from respondents. This will help to get the data as fast as possible because it can be sent via social media such as Facebook, Line or WhatsApp due to the time limitation. In addition, this method was a convenience for the researcher and allow researcher for real-time monitoring the number on the respondent and the result.

The aim of this Thematic Paper is to explore the factors that affect the intention of Thai senior to use the mobile banking application. As for the goal of this research, a huge number of respondents are needed, thus, a quantitative research method is an appropriate method to collect the exact data.

3.2 Data Collection

The survey was created via an online survey available from (doc.google.com). Langley (2011) assisted that distributing electronic survey gives us both pros and cons. In terms of pros, it provides an inexpensive distribution and instant feedback. As for cons, however, some demographic data may not be accurate as an online questionnaire depends on the honesty of people' responses. If they lied, it will lead to inaccurate data collection. Additionally, distributing online surveys may capture only consumers who play on the internet, it may not cover all styles of consumers in Thailand.

3.3 Data Analysis

After getting data from conducting a survey, SPSS was applied to analyze these data accompanied by literature reviews. In order to analyze surveys descriptive

statistics, correlation and linear regression were used. Descriptive statistics describe the main features of data collected.

Table 3.1 Screening Question and Research Question

Factor	Question	Reference (Adaptation)
General Question	What channel do you often use when you want to do a banking activity?	
Perceived usefulness	Using mobile banking application would improve my performance in conducting banking transactions.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	Using mobile banking application would help to conduct my banking transaction faster.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	Using mobile banking would make it easier for me to conduct banking transactions.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	Using mobile banking would make my life more convenient because I can conduct my banking transaction anywhere, anytime.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I found that using mobile banking application useful in conducting my banking transactions.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I found that using moblie banking application is free of any cost.	
	Using mobile banking application fits well with the way I like to engage in online transactions.	
Perceived Ease of Use	Learning how to use Mobile banking is easy for me. If the customer service representative is available when I need it.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	My interaction with Mobile banking is clear and understandable	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I find Mobile banking easy to use	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	It is easy for me to become skillful at using Mobile banking	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I use mobile banking application because of The design (such as colors, font size, graphics, animations, etc.) is trendy.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	Using mobile banking application is fit my lifestyle	
	I think it is easy to use mobile banking to accomplish banking tasks	
Security and Privacy	I think that the personal information that I provide on mobile banking application is well protected.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I think that online transactions carried out on mobile banking application are secure.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I think that the confidentiality and privacy of my personal information is assured when I do mobile banking	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	When conducting a transaction using a mobile banking application, I am afraid that I will lose my money.	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	Mobile banking application is trustworthy	Glavee-Geo, Shaikh, and Karjaluoto (2017)
	I feel not save to provide my personal privacy information over mobile banking application	
	I have a confidence to use mobile banking application.	

All the question in table 3.1 will be asked to conduct the result from all the respondents online but in order to get the result according to the purpose of the research, I will select only the respondents that older than 50 years old. To complete this, I will ask the general question so the respondents won't feel offended.

CHAPTER IV
RESULTS

4.1 Research Finding

This research was sent to 160 respondents via google form (doc.google.com). It received back 160 respondents which are equal to 100%.

Table 4.1 Screening Questions

Have you ever know about a mobile banking application?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	111	69.4	69.4	69.4
	No	49	30.6	30.6	100.0
	Total	160	100.0	100.0	

Have you download and have any mobile banking on your smartphone?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	100	62.5	62.5	62.5
	No	60	37.5	37.5	100.0
	Total	160	100.0	100.0	

Have you ever try to use the mobile banking application?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	111	69.4	69.4	69.4
	No	49	30.6	30.6	100.0
	Total	160	100.0	100.0	

What channel do you often use when you want to do a banking activity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Branch	70	43.8	43.8	43.8
	ATM	32	20.0	20.0	63.7
	Internet	53	33.1	33.1	96.9
	Other	5	3.1	3.1	100.0
	Total	160	100.0	100.0	

Table 4.1 shows the screening question that I use to screen the sample. The first 3 tables show that the majority of people know about mobile banking which is around 62%-69% of all the respondents. This can be assumed that most of Thai people know about the service but if we look at the second table, the number of people who download and have the application on their smartphone is a little bit low. So it might be because of some concern. For the last table, I want to find out the channel that the respondents chose over the mobile banking, the result shows that 70 people from 160 people often use the physical bank (43.8%.)

Since this survey is focused on conducting the result from the people with age 50 years old and above so from this point I will only focus on the result from this group which is 75.6% of the respondents. (Table 4.2)

Table 4.2 Age variation

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 and under	2	1.3	1.3	1.3
	21-49 yrs	37	23.1	23.1	24.4
	over 50 yrs	121	75.6	75.6	100.0
	Total	160	100.0	100.0	

4.2 Factor Analysis

Factor analysis is a statistical technique for identifying which underlying factors are measured by a (much larger) number of observed variables. The 'underlying factor' is difficult to measure, such as IQ satisfaction, emotion, etc. we are calling construct which we are trying to measure by using factor analysis.

Table 4.3 Rotated component matrix before cutting the uncorrelated variable

Rotated Component Matrix[a]

	Component		
	1	2	3
PEOU06	.903		
SP03	.897		
PEOU01	.884		
PEOU04	.883		
SP07	.875		
PU07	.862		
SP02	.788		
SP05	.767		
PEOU07	.765	.403	
PU01	.748	.465	
PEOU02	.736	.418	
PEOU03	.734	.464	
SP01	.729		
PU03	.723	.532	
PU02	.692	.606	
PEOU05	.662		.452
PU04		.830	
PU05		.779	
PU06		.754	
SP04			.865
SP06			.819

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

From 21 variables we can probably measure 3 constructs but it the measurement is not clear, so I am respectively cutting the question number PU01 PU02, PU03, PEOU02, PEOU03, PEOU05, and PEOU07 out because the variable has more than 1 substantial factor loading, it's call cross-loadings. This shows the complicated of the interpretation of our factors. After there are no cross-loadings. After cutting all the question that don't correlate in each component one by one. Now, these variable all relate to the respondent receiving clear information. So I describe the component that is in the same group.

Component 1: Perceived usefulness

Component 2: Perceived ease of use

Component 3: Security and privacy

4.3 Motivation & Preference

4.3.1 Regression Analysis

Correlation and multiple regression analyses were conducted to examine the relationship between the intention to use the mobile banking service in elderly user and various potential predictors which are perceived usefulness, perceived ease of use, and security and privacy.

Table 4.4 Correlation between ITU and 3 constructs

Correlations

		ITU	NewPU	NewPEOU	NewSP
ITU	Pearson Correlation	1	.604**	.694**	.682**
	Sig. (2-tailed)		.000	.000	.000
	N	121	121	121	121
NewPU	Pearson Correlation	.604**	1	.537**	.682**
	Sig. (2-tailed)	.000		.000	.000
	N	121	121	121	121
NewPEOU	Pearson Correlation	.694**	.537**	1	.757**
	Sig. (2-tailed)	.000	.000		.000
	N	121	121	121	121
NewSP	Pearson Correlation	.682**	.682**	.757**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	121	121	121	121

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

In the table above show that intention to use and perceived usefulness have a statistically significant linear relationship ($p < .001$).

Table 4.5 Model summary of the backward multiple regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.755[a]	.570	.559	.51900	.570	51.777	3	117	.000

a. Predictors: (Constant), NewSP, NewPU, NewPEOU

Table 4.6 ANOVA table which shows a significant level of the backward multiple regression

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.840	3	13.947	51.777	.000[b]
	Residual	31.515	117	.269		
	Total	73.355	120			

a. Dependent Variable: ITU

b. Predictors: (Constant), NewSP, NewPU, NewPEOU

Table 4.7 Backward multiple regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.012	.257		.047	.963	-.497	.521
	NewPU	.318	.108	.243	2.931	.004	.103	.532
	NewPEOU	.358	.082	.403	4.345	.000	.195	.521
	NewSP	.342	.173	.211	1.972	.051	-.001	.685

a. Dependent Variable: ITU

The correlation table showed that there are significant between intention to use the mobile banking service and the 3 constants. They have a statistically significant linear relationship ($p < .001$). The model summary table showed that $R^2 = .570$. All the constants have a significant positive regression weight to the intention to use. In the corresponding coefficients table, only perceived ease of use was found statistically significant in predicting claimed intention score (beta = .403, t = 4.345, p-value = 0.000).

4.3.2 One-way ANOVA Analysis

When running with one-way ANOVA analysis, I can conclude that

H1. Perceived usefulness is significant so it positively affects the intention to use mobile banking in an elderly user ($F3, 117 = 24.429$, $p < 0.001$).

H3: PEOU is significant so it positively affects the intention to use mobile banking in an elderly user ($F3, 117 = 53.793$, $p < 0.001$).

Table 4.8 one-way ANOVA analysis which shows the relationship between ITU and PU and PEOU to answer the 1st and 3rd hypothesis

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
NewPU	Strongly Disagree	16	2.0625	.49582	.12395	1.7983	2.3267	1.00	2.50
	Disagree	80	2.4281	.40212	.04496	2.3386	2.5176	1.25	4.00
	Agree	13	2.7115	.62788	.17414	2.3321	3.0910	1.75	3.50
	Strongly Agree	12	3.5208	.68638	.19814	3.0847	3.9569	2.00	4.00
	Total	121	2.5186	.59788	.05435	2.4110	2.6262	1.00	4.00
NewPEOU	Strongly Disagree	16	1.3542	.41220	.10305	1.1345	1.5738	1.00	2.33
	Disagree	80	1.3917	.55315	.06184	1.2686	1.5148	1.00	2.67
	Agree	13	2.5897	.75955	.21066	2.1307	3.0487	1.33	3.67
	Strongly Agree	12	3.3889	.70830	.20447	2.9389	3.8389	1.67	4.00
	Total	121	1.7135	.88119	.08011	1.5549	1.8721	1.00	4.00

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
NewPU	6.830	3	117	.000
NewPEOU	3.287	3	117	.023

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
NewPU	Between Groups	16.521	3	5.507	24.429	.000
	Within Groups	26.375	117	.225		
	Total	42.896	120			
NewPEOU	Between Groups	54.017	3	18.006	53.793	.000
	Within Groups	39.162	117	.335		
	Total	93.179	120			

Table 4.9 one-way ANOVA analysis which shows the relationship between PU and PEOU to answer the 2nd hypothesis

Descriptives

NewPU

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	57	2.4605	.22054	.02921	2.4020	2.5190	1.00	2.50
1.33	8	1.9688	.47127	.16662	1.5748	2.3627	1.50	2.50
1.67	7	2.1071	.47559	.17976	1.6673	2.5470	1.25	2.50
2.00	19	2.2632	.58019	.13311	1.9835	2.5428	1.75	3.75
2.33	10	2.3750	.69970	.22127	1.8745	2.8755	1.25	4.00
2.67	5	2.6500	.51841	.23184	2.0063	3.2937	2.00	3.25
3.00	4	3.2500	.64550	.32275	2.2229	4.2771	2.50	4.00
3.33	1	3.2500	.	.	.	.	3.25	3.25
3.67	6	3.6250	.26220	.10704	3.3498	3.9002	3.25	4.00
4.00	4	4.0000	.00000	.00000	4.0000	4.0000	4.00	4.00
Total	121	2.5186	.59788	.05435	2.4110	2.6262	1.00	4.00

Test of Homogeneity of Variances

NewPU

Levene Statistic	df1	df2	Sig.
6.267[a]	8	111	.000

a. Groups with only one case are ignored in computing the test of homogeneity of variance for NewPU.

ANOVA

NewPU

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.126	9	2.681	15.853	.000
Within Groups	18.770	111	.169		
Total	42.896	120			

H2: PEOU is significant so it positively affects the perceived usefulness of mobile banking in an elderly user ($F_{9, 111} = 15.853$, $p < 0.001$).

Table 4.10 one-way ANOVA analysis which shows the relationship between PU and SP to answer the 4th hypothesis

Descriptives

NewPU

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	1	1.0000	.	.	.	.	1.00	1.00
1.29	2	1.3750	.17678	.12500	-.2133	2.9633	1.25	1.50
1.57	6	2.0833	.43780	.17873	1.6239	2.5428	1.75	2.75
1.71	1	1.7500	.	.	.	.	1.75	1.75
1.86	8	2.1563	.69356	.24521	1.5764	2.7361	1.25	3.50
2.00	56	2.5223	.20381	.02724	2.4677	2.5769	2.25	4.00
2.14	13	2.2885	.52882	.14667	1.9689	2.6080	1.75	3.75
2.29	8	2.3438	.62589	.22129	1.8205	2.8670	1.50	3.25
2.43	5	2.2000	.20917	.09354	1.9403	2.4597	2.00	2.50
2.57	3	2.3333	.28868	.16667	1.6162	3.0504	2.00	2.50
2.86	3	3.1667	.76376	.44096	1.2694	5.0640	2.50	4.00
3.00	3	2.9167	.76376	.44096	1.0194	4.8140	2.25	3.75
3.14	4	3.4375	.55434	.27717	2.5554	4.3196	2.75	4.00
3.29	5	3.6500	.33541	.15000	3.2335	4.0665	3.25	4.00
3.57	3	3.8333	.28868	.16667	3.1162	4.5504	3.50	4.00
Total	121	2.5186	.59788	.05435	2.4110	2.6262	1.00	4.00

Test of Homogeneity of Variances

NewPU

Levene Statistic	df1	df2	Sig.
5.730[a]	12	106	.000

a. Groups with only one case are ignored in computing the test of homogeneity of variance for NewPU.

ANOVA

NewPU

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.943	14	1.853	11.586	.000
Within Groups	16.953	106	.160		
Total	42.896	120			

H4: Security and privacy are significant so it positively affects the perceived usefulness of mobile banking in an elderly user ($F_{14, 106} = 11.586$, $p < 0.001$).

Table 4.11 one-way ANOVA analysis which shows the relationship between PU and SP to answer the 5th hypothesis

Descriptives

NewPEOU

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	1	1.0000	.	.	.	.	1.00	1.00
1.29	2	1.5000	.23570	.16667	-.6177	3.6177	1.33	1.67
1.57	6	1.7222	.44305	.18088	1.2573	2.1872	1.00	2.00
1.71	1	2.0000	.	.	.	.	2.00	2.00
1.86	8	1.7083	.45207	.15983	1.3304	2.0863	1.00	2.33
2.00	56	1.0893	.32093	.04289	1.0033	1.1752	1.00	2.67
2.14	13	1.8205	.35001	.09708	1.6090	2.0320	1.00	2.33
2.29	8	2.0417	.60257	.21304	1.5379	2.5454	1.00	2.67
2.43	5	1.8000	.60553	.27080	1.0481	2.5519	1.00	2.33
2.57	3	2.6667	.33333	.19245	1.8386	3.4947	2.33	3.00
2.86	3	2.7778	1.01835	.58794	.2481	5.3075	1.67	3.67
3.00	3	2.7778	.76980	.44444	.8655	4.6901	2.33	3.67
3.14	4	3.4167	.56928	.28464	2.5108	4.3225	2.67	4.00
3.29	5	3.6667	.40825	.18257	3.1598	4.1736	3.00	4.00
3.57	3	3.5556	.50918	.29397	2.2907	4.8204	3.00	4.00
Total	121	1.7135	.88119	.08011	1.5549	1.8721	1.00	4.00

Test of Homogeneity of Variances

NewPEOU

Levene Statistic	df1	df2	Sig.
2.899[a]	12	106	.002

a. Groups with only one case are ignored in computing the test of homogeneity of variance for NewPEOU.

ANOVA

NewPEOU

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	73.929	14	5.281	29.079	.000
Within Groups	19.250	106	.182		
Total	93.179	120			

H5: Security and privacy are significant so it positively affects PEOU of mobile banking in an elderly user ($F_{14, 106} = 29.079$, $p < 0.001$).

4.3.3 Consumer Intention

Refer to the table above which show the significant level between intention to use and respondent's demographic, there is no significant between this 2 object but we can analyze the respondent profile. Gender is the first factor that has high insignificant so chose to cut this demographic first. I can assume that gender is not the main factor that affects the intention to use the elderly use. I decided to find out the relationship between the less of the factors which are education, occupation, and, monthly income and intention to use the mobile banking application in elderly user.

Table 4.12 one-way ANOVA analysis which shows the relationship between ITU and the consumer preference.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Gender	Between Groups	.469	3	.156	.505	.680
	Within Groups	36.274	117	.310		
	Total	36.744	120			
Education	Between Groups	4.190	3	1.397	3.332	.022
	Within Groups	49.049	117	.419		
	Total	53.240	120			
occupation	Between Groups	17.033	3	5.678	2.817	.042
	Within Groups	235.777	117	2.015		
	Total	252.810	120			
MonthlyIncome	Between Groups	14.877	3	4.959	3.411	.020
	Within Groups	170.098	117	1.454		
	Total	184.975	120			

4.3.4 Consumer intention to use with education

Table 4.13 Crosstabulation between consumer intention to use and education

ITU * Education Crosstabulation

			Education			
			high school	Bachelor Degree	Master or Doctoral Degree	Total
ITU	Strongly Agree	Count	1	9	2	12
		% within ITU	8.3%	75.0%	16.7%	100.0%
		% within Education	2.4%	14.3%	11.8%	9.9%
		% of Total	0.8%	7.4%	1.7%	9.9%
	Agree	Count	0	10	3	13
		% within ITU	0.0%	76.9%	23.1%	100.0%
		% within Education	0.0%	15.9%	17.6%	10.7%
		% of Total	0.0%	8.3%	2.5%	10.7%
	Disagree	Count	33	37	10	80
		% within ITU	41.3%	46.3%	12.5%	100.0%
		% within Education	80.5%	58.7%	58.8%	66.1%
		% of Total	27.3%	30.6%	8.3%	66.1%
	Strongly Disagree	Count	7	7	2	16
		% within ITU	43.8%	43.8%	12.5%	100.0%
		% within Education	17.1%	11.1%	11.8%	13.2%
		% of Total	5.8%	5.8%	1.7%	13.2%
Total		Count	41	63	17	121
		% within ITU	33.9%	52.1%	14.0%	100.0%
		% within Education	100.0%	100.0%	100.0%	100.0%
		% of Total	33.9%	52.1%	14.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.921[a]	6	.044
Likelihood Ratio	17.784	6	.007
Linear-by-Linear Association	6.165	1	.013
N of Valid Cases	121		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is 1.69.

In the table above, I want to know about the relationship of which is the potential group that has high intention to use the application by looking into the education profile. I found out that the people with the bachelor's degree and higher tend to have more intention to use the application (7.4% and 1.7%) while people with lower education refuse to use (0.8%). However, if we look at the chi-square test, the result confirms that this factor is insignificant to the intention to use (sig. = .044) so I can assume that this factor has less importance to the user intention.

4.3.5 Consumer intention to use with occupation

Table 4.14 Crosstabulation between consumer intention to use and occupation

ITU * occupation Crosstabulation

			occupation						
			Government Officer	State Enterprise Officer	Private Company Officer	Business Owner	Freelancer	Retire	Total
ITU	Strongly Agree	Count	0	3	1	1	0	7	12
		% within ITU	0.0%	25.0%	8.3%	8.3%	0.0%	58.3%	100.0%
		% within occupation	0.0%	27.3%	7.1%	3.1%	0.0%	35.0%	9.9%
		% of Total	0.0%	2.5%	0.8%	0.8%	0.0%	5.8%	9.9%
	Agree	Count	2	2	4	3	2	0	13
		% within ITU	15.4%	15.4%	30.8%	23.1%	15.4%	0.0%	100.0%
		% within occupation	22.2%	18.2%	28.6%	9.4%	5.7%	0.0%	10.7%
		% of Total	1.7%	1.7%	3.3%	2.5%	1.7%	0.0%	10.7%
	Disagree	Count	7	3	7	25	27	11	80
		% within ITU	8.8%	3.8%	8.8%	31.3%	33.8%	13.8%	100.0%
		% within occupation	77.8%	27.3%	50.0%	78.1%	77.1%	55.0%	66.1%
		% of Total	5.8%	2.5%	5.8%	20.7%	22.3%	9.1%	66.1%
	Strongly Disagree	Count	0	3	2	3	6	2	16
		% within ITU	0.0%	18.8%	12.5%	18.8%	37.5%	12.5%	100.0%
		% within occupation	0.0%	27.3%	14.3%	9.4%	17.1%	10.0%	13.2%
		% of Total	0.0%	2.5%	1.7%	2.5%	5.0%	1.7%	13.2%
Total		Count	9	11	14	32	35	20	121
		% within ITU	7.4%	9.1%	11.6%	26.4%	28.9%	16.5%	100.0%
		% within occupation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	7.4%	9.1%	11.6%	26.4%	28.9%	16.5%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.557[a]	15	.001
Likelihood Ratio	40.513	15	.000
Linear-by-Linear Association	.028	1	.867
N of Valid Cases	121		

a. 18 cells (75.0%) have expected count less than 5. The minimum expected count is .89.

In the table above, I tested the relationship between intention to use and the occupation. I found out that the people who work as the state enterprise tent to have more intention to use the application (2.5%) while the business owner and the freelancer refuse to use (20.7% and 22.3%). However, if we look at the chi-square test, the result confirms that this factor is significant to the intention to use (sig. = .001) so I can assume that this factor has high importance to the user intention.

4.3.6 Consumer intention to use with monthly income

Table 4.15 Crosstabulation between consumer intention to use and monthly income

ITU * MonthlyIncome Crosstabulation

			MonthlyIncome					
			under 15000 THB	15001-30000 THB	30001-45000 THB	45001-60000 THB	More than 60001 THB	Total
ITU	Strongly Agree	Count	5	1	2	0	4	12
		% within ITU	41.7%	8.3%	16.7%	0.0%	33.3%	100.0%
		% within MonthlyIncome	41.7%	4.3%	5.7%	0.0%	17.4%	9.9%
		% of Total	4.1%	0.8%	1.7%	0.0%	3.3%	9.9%
	Agree	Count	0	2	2	2	7	13
		% within ITU	0.0%	15.4%	15.4%	15.4%	53.8%	100.0%
		% within MonthlyIncome	0.0%	8.7%	5.7%	7.1%	30.4%	10.7%
		% of Total	0.0%	1.7%	1.7%	1.7%	5.8%	10.7%
	Disagree	Count	4	16	26	25	9	80
		% within ITU	5.0%	20.0%	32.5%	31.3%	11.3%	100.0%
		% within MonthlyIncome	33.3%	69.6%	74.3%	89.3%	39.1%	66.1%
		% of Total	3.3%	13.2%	21.5%	20.7%	7.4%	66.1%
	Strongly Disagree	Count	3	4	5	1	3	16
		% within ITU	18.8%	25.0%	31.3%	6.3%	18.8%	100.0%
		% within MonthlyIncome	25.0%	17.4%	14.3%	3.6%	13.0%	13.2%
		% of Total	2.5%	3.3%	4.1%	0.8%	2.5%	13.2%
Total		Count	12	23	35	28	23	121
		% within ITU	9.9%	19.0%	28.9%	23.1%	19.0%	100.0%
		% within MonthlyIncome	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	9.9%	19.0%	28.9%	23.1%	19.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.170[a]	12	.000
Likelihood Ratio	36.441	12	.000
Linear-by-Linear Association	.353	1	.553
N of Valid Cases	121		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is 1.19.

The last factor that I used to test is the monthly income. I found out that the group of people with monthly income under 15,000 THB and more than 60,000 THB have more intention to use the application (4,1% and 3.3%) while the group of people who have income range in 30,001 to 45,000 THB has less intention to use the application (4.1%). And if we look at the chi-square test, the result confirms that this factor is significant to the intention to use (sig. = .000) so I can assume that this factor has the highest importance to the user intention.

CHAPTER V
CONCLUSION

5.1 Conclusion

Almost 70% of the respondents have known the mobile banking service. Many respondents feel no urgency in adopting the service. They tent to use alternative electronic channels of banking, and some unaware of the mobile banking services. Most of them decided to use another channel more, like ATM, internet and even face-to-face banking. The difference is mobile banking can make their life more convenient because they can conduct banking activity anytime, and anywhere.

While most of the previous research studies about the intention to use the mobile banking application of the regular person. In this research, I choose to focus on the elderly user only. In Thailand and also in the rest of the world, senior society is growing and they will affect lots on the economic system in both Thailand and the rest of the world. So I think it's the opportunity to gain their attention for the product. It is very important to the banking business to keep in their account that they all have something in their hand, it's just need some strategies to draw the elderly into the new era of the banking.

From a theoretical point of view, this study has served to broaden the understanding of the factors influencing mobile banking using in the elderly. One of the theoretical contributions of this study is the extension of TAM by including security and privacy. Since Thailand always have news about internet scams. It leads to the doubt of using the mobile banking service in the elderly group.

From the result, I found out that perceived ease of use is the most important factor for the elderly to choose using the technology, it this case, the mobile banking application. From some question, they do not need to start something from the beginning. Most of them are in the baby boomers era. They don't use to the high technology. For the 2nd factor, perceived of usefulness, it's also an important effect on their intention to use too. They need to be sure that the service or product will definitely help their

everyday life activities. The last factor is security and privacy. I already mentioned earlier that in Thailand, there are lots of the new about the scam that fool the people for the money such as dating-scam, fake charities and etc. And when it about the money, the security and privacy become a huge concern for the elderly. So mobile banking usually make them feel insecure to use.

5.2 Recommendation

5.2.1 Perceived ease of use

This factor has the highest effect on the intention of the user. This is mean that the elderly concern more on the easiness of the application. So my recommendation is to design an elderly friendly version for the elderly to use. From the result, the group of higher education tends to have more interest in using the application but the result also shows that most of the respondents that have low intention to use are the group that has lower education. This also means that the current version of the application in the market is too complicated. The elderly don't want to learn more new technology so if the design is easy to use and easy to understand without using lots of effort. The level of the elderly user might increases. My recommendation will be the senior-friendly version of the banking application. The interface should be more accommodating to various needs associated with aging, such as impaired vision. The visual and design is very important. In order to make the senior version work, the design of the application has to change. This means that banks need to take details such as font size and text style into consideration when designing an interface with as much concern as they might the color and design in order to attract younger users.

5.2.2 Perceived usefulness

This factor is also having an effect on the intention to use in the elderly user also. In order to gain more user, the application must provide the most useful activities for them. The activity that each of them need to use every day. Since we are in the era of the AI, the application can use it to help the bank to recognize the customer and their activities when they visit the branch. As more users transition into mobile banking

services instead of physically visiting a branch, banks need to provide familiar and comfortable ways for them to communicate with customer service when they need it. From my first recommendation that we need to redesign the application. I would recommend adding an AI into the application too. So the AI can learn and predict all the activities of the customer. Another recommendation would be the communication feature. Since the senior might not use the technology, it might be a great idea to have a Click-to-call service, so they will feel more connected to their virtual banking services.

5.2.3 Security and privacy

This factor had an effect on the perceived ease of use and perceived usefulness. For this factor, my recommendation would be building trust to the customer. The reason why I mention trust because the fact is all the mobile banking application have very high security and privacy already. However, the customer still has doubt anyway so I think if the company can build trust to their customer, it will make them start to use the application. In order to complete that, it needs the help of the publicity. A social influencer might be a great choice to bring more customers.

5.3 Limitation and Future Research

5.3.1 Time Constraint

This is the main limitation of this research study, as the time is too short and the researcher did not have enough time to enlarge the research.

5.3.2 Sample Size

The sample size that the researcher conduct is quite small so the result that comes out may not accurate.

For future study, quantitative research might not be the best tool anymore. I would use qualitative research in order to understand more to the individual need of the sample. So I will be able to investigate more in a vertical way.

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APPENDICES

Appendix A: Questionnaire

Intention to use a mobile banking application: Questionnaire

Introduction

I'm a master's degree students from the College of Management Mahidol University who would like to study the perception of a mobile banking application. This questionnaire will take no more than 10 minutes to complete.

Screening Questions

1. Have you ever know about a mobile banking application?

   __ Yes. __ No.

2. If yes, have you download and have any mobile banking on your smartphone?

   __ Yes. __ No.

3. Have you ever try to use the mobile banking application?

   __ Yes. __ No.

General Questions

4. What channel do you often use when you want to do a banking activity?

   □ Use the physical bank branch

   □ Use a Machine (ATM/Passbook Update)

   □ Use Internet banking on computer

   □ Use others kind of financial institutions

Specific Questions

First Construct: Perceived Usefulness (PU)

Please specify the level of your agreement on the following statement:

(Assessment scale: 1=Strongly Disagree, 2=Disagree, 3=Agree,4=Strongly Agree)

Statement	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
5. Using mobile banking application would improve my performance in conducting banking transactions.	1	2	3	4
6. Using mobile banking application would help to conduct my banking transaction faster.	1	2	3	4
7. Using mobile banking would make it easier for me to conduct banking transactions.	1	2	3	4
8. Using mobile banking would make my life more convenient because I can conduct my banking transaction anywhere, anytime.	1	2	3	4
9. I found that using mobile banking application useful in conducting my banking transactions.	1	2	3	4
10. I found that using mobile banking application is free of any cost.	1	2	3	4
11. Using mobile banking application fits well with the way I like to engage in online transactions.	1	2	3	4

Second Construct: Perceived Ease of Use (PEOU)

Please specify the level of your agreement on the following statement:

(Assessment scale: 1=Strongly Disagree, 2=Disagree, 3=Agree,4=Strongly Agree)

Statement	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
12. Learning how to use Mobile banking is easy for me. If the customer service representative is available when I need it.	1	2	3	4
13. My interaction with Mobile banking is clear and understandable.	1	2	3	4
14. I find Mobile banking easy to use.	1	2	3	4
15. It is easy for me to become skillful at using Mobile banking.	1	2	3	4
16. I use mobile banking application because of The design (such as colors, font size, graphics, animations, etc.) is trendy.	1	2	3	4
17. Using mobile banking application is fit my lifestyle.	1	2	3	4
18. I think it is easy to use mobile banking to accomplish banking tasks.	1	2	3	4

Third Construct: Security and Privacy (SP)

Please specify the level of your agreement on the following statement:

(Assessment scale: 1=Strongly Disagree,2=Disagree,3=Agree,4=Strongly Agree)

Statement	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
19. I think that the personal information that I provide on mobile banking application is well protected.	1	2	3	4
20. I think that online transactions carried out on mobile banking application are secure.	1	2	3	4

Statement	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
21. I think that the confidentiality and privacy of my personal information is assured when I do mobile banking.	1	2	3	4
22. When conducting a transaction using a mobile banking application, I am afraid that I will lose my money.	1	2	3	4
23. Mobile banking application is trustworthy.	1	2	3	4
24. I feel not save to provide my personal privacy information over mobile banking application.	1	2	3	4
25. I have a confidence to use mobile banking application.	1	2	3	4

Intention to Use (ITU)

Please specify the level of your agreement on the following statement: (Assessment scale: 1=Definitely not buy, 2=Probably not but, 3=Probably buy,4=Definitely buy)

Statement	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
26. I think I might use the mobile banking application than useful to me, easy to use, have high security from trustworthy financial institutions.	1	2	3	4

Demographic Questions

17. Please indicate your gender

__ Male __ Female __ Other……...

18. What is your age range?

□ 20 years old and under (1)

□ 21 – 49 Years old (2)

□ Over 50 years old (3)

19. What is your highest level of educational qualification?

__ High School __ Bachelor degree

__ Master or Doctoral degree __ Other…….

20. What is your occupation?

□ Student (1) □ Government Officer (2)

□ State Enterprise Officer (3) □ Private Company Officer (4)

□ Business Owner (5) □ Freelancer (6)

□ Retire (7)

21. Please specify your personal income range?

□ Under 15,000 THB □ 15,001 – 30,000 THB

□ 30,001 – 45,000 THB □ 45,001 – 60,000 THB

□ More than 60,000 THB

Thank You for your kind cooperation.