

Applying Multiple Regression Analysis to Determine the Key Determinants of Mobile Banking Service Quality on Customer Satisfaction: A Case Study of Thai Commercial Banks

Titida Nochai^{1*}

ABSTRACT

The purpose of this study was to find the key determinants of mobile banking service quality that will have the impact on customer satisfaction among top three Thai commercial banks, namely Kasikorn Bank, Siam Commercial Bank, and Bangkok Bank. A sample survey is conducted during October 2017 through December 2017 in Bangkok area. The questionnaires were distributed to 450 respondents who have ever been using mobile banking by using convenience sampling. Data was analyzed by using Multiple Regression Analysis at 0.05 level of significance. The results of the study shown that the four of six determinants of mobile banking service quality as customer support, service security, ease of use, and performance were the important determinants that have the impact on customer satisfaction.

Key words: Customer Satisfaction, Mobile Banking Service, Multiple Regression Analysis, Service Quality

* Corresponding author; e-mail address: titida@scitech.au.edu

¹ Department of Information Technology, Vincent Mary School of Science and Technology, Assumption University, Bangsaothong, Samuthprakarn 10540

INTRODUCTION

Nowadays, the commercial banking is one of the financial institutions which provide several kinds of financial service. The major role of banking is developing a deposit-withdrawal system and managing it to gain the maximum profit by performing lending activities. Whenever customers operate the transaction they need more convenient, fast and security. Thereby, most of commercial banking has developed their own businesses by integrating of services and technologies together in order to improve the quality of transaction systems and to serve the needs of customer to operate the transaction more flexible, convenient, save time, and safety.

Digital banking is one of financial transaction done through internet system network of specific commercial bank that provides this service. Digital banking has become incredibly important channels for banks, as an increasing number of customers prefer using digital devices to conduct banking activities due to the simplicity and convenience (Weng, W., 2017)

Mobile banking transactions in Thailand have surpassed internet banking transactions in terms of volume during the first half of 2015, driven by the rising mobile penetration and various mobile applications Thai banks developed. The number of mobile banking users in Thailand also exceeded the number of internet banking users in the third quarter of 2015. The country has seen a substantial jump in the number of mobile banking users, with 1.2 million in 2013 to 20.9 million in 2016. Meanwhile, the volume of mobile banking transactions registered of 117% during the past three years to reach 585 million at the end of 2016, which was 2.4 times the volume of internet banking transactions. Mobile banking transaction value surged by a massive 87% per year between 2013 and 2016, compared to 12% for internet banking (Weng, W., 2017)

In Thailand, mostly mobile banking has been available on both IOS and Android platform. For example, *K-MOBILE BANKING PLUS* of Kasikorn Bank (KBANK), *Bualuang mBanking* of Bangkok Bank (BBL), *SCB Easy* of Siam Commercial Bank (SCB), *KTbnetbank* of Krung Thai Bank (KTB), *TMBtouch* of Thai Military Bank (TMB) and *Krungsri Mobile App* of Bank of Ayudthaya (BAY). There are several useful options offered, for example, balance inquiries and statement, checking transfer and payment transaction history, paying bill of goods and services, some can scan QR code for paying bills, providing 24 hours-7days service, completing a task accurately, contacting staff to check immediately, providing accurate information & up to date, transaction process is fast, and providing online registration times were the important factors that have the impact on customer satisfaction (Nochai, R. & Nochai, T., 2016).

In 2018, KBank is still to be the industry's leader in digital banking with eight million users on its mobile app KPlus. SCB, second to KBank in online banking popularity with its mobile app SCB Easy, and followed with Bualuang iBanking of Bangkok Bank (BBL) (Banchongduang, S., 2018)

Although customers use digital banking more often, they are not abandoning physical channels. Concerns over the security of digital banking services are the main reason why consumers do not engage in digital banking. Meanwhile, cyber security issues are also a concern of those who use digital banking services. Banks are working to improve the security of digital banking services and also simplify the authentication processes to make them user friendly. Banks are facing rising customer expectations and falling customer loyalty. It is easier than ever for customers to switch banks. User experience is vital in improving customer satisfaction and customer retention. Mobile banking channel must be enhanced for banks to remain competitive. Banks can try to deliver comprehensive mobile banking services, such as deposits, withdrawals and lending (Weng, W., 2017).

RESEARCH OBJECTIVE

The objective of this study was to find the key determinants of mobile banking service quality that will have the impact on customer satisfaction among top three Thai commercial banks in Bangkok area, namely Kasikorn Bank (KB), Siam Commercial Bank (SCB), and Bangkok Bank (BB).

LITERATURE REVIEW

The customer satisfaction is defined as a judgment that a product or service feature, or the product or service itself, provide (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under or over fulfillment (Oliver, R.L., 1997). Many studies have shown that customer satisfaction gives security of future revenue, decreases elasticity of price, and bring a reduction in future transaction costs. Most of the studies consider consumer satisfaction as an important determinant for the service sector. It is the major differentiator and element for any company's business strategy (Jannat, M. & Ahmed, I., 2015). In relationship of the purchaser's expectations and customer satisfaction is largely contingent upon the product or service's perceived performances. The customer is dissatisfied when the product's performance is lower than expectations, satisfied if performance matches expectations and highly satisfied or delighted when it outperforms the customer's expectations (Kotler & Armstrong, 2010). Service quality is an essential consideration for organizational growth and success and is of great strategic importance for management. Service quality has recognized as a key factor in keeping competitive advantage and sustaining satisfying relationships with customers (Zeithml, V.A., et al., 2002). Service quality leads to overall customer satisfaction. The study of Amiri Aghdaie & Faghani (2012) applied the SERVQUAL model to identify the relationship between customer satisfaction and mobile banking services. Researchers examined that; reliability, empathy, responsiveness, and tangibility are positively correlated with customer satisfaction whereas the factor assurance has no relation. Kumbhar (2011)

showed in a study that in e-banking, perceived value, customer's brand perception, user easiness, cost effectiveness, ability of handling problem, security and assurance, and responsiveness are important factors on customer satisfaction. Some other factors for influencing customer satisfaction on mobile banking are identified as usefulness, relative advantages, easiness of use, risk perception and lifestyle and present need of customers (Kahandawa & Wijayanayake, 2014). Yang, Jun, and Peterson (2004) identified five online service quality dimensions (responsiveness, reliability, competence, access and security) and their relationships with the customer satisfaction. Liu and Arnett (2000) identified five critical dimensions of online service quality in relations to customer satisfaction in the website. Among these, the quality of information that is relevant, accurate, timely, customized and complete are given priority for the customer satisfaction in the online service. Khalil and Pearson (2007) have found that trust significantly affects attitude towards Internet banking acceptance. To encourage Internet banking adoption, banks need to develop strategies that improve the customer's trust in the underlying technology. The other factors include quick response, assurance, follow-up and empathy. Security, correct transaction, customer control on transaction (personalization), order tracking facilities and privacy are other important factors in the online service that affect the customer satisfaction. Jun and Cai (2001) identified 17 service quality dimensions of Internet banking service quality. These are reliability, responsiveness, competence, courtesy, credibility, access, communication, understanding the customer, collaboration, continuous improvement, content, accuracy, ease of use, timeliness, aesthetics, security and divers features.

On the basis of the above literature reviews, six determinants (safety reliability, transactions efficiency, customer support, service security, ease of use, and performance) have been chosen as the independent variables which may affect the dependent variable (customer satisfaction) of this study. The twenty-eight sub-factors are organized into six determinants as follow:

1. Safety reliability (SR)

It is defined as the firm performs the services right the first time and the firm honors its promises. It involves in accuracy in billing, keeping records correctly, performing the service at the designated time. In this research, it consists of perform the service right at the first time, deliver the service exactly as promise, and complete a task accurately.

2. Transactions efficiency (TE)

This is the ability of the customers gets into website, find they desire product and information associate with it, and check out with minimal of effort. In this research, it consists of information is up to date, provide complete help function, transaction process is fast.

3. Customer support (CS)

Including before sell support and after-sell supports. Before customer make decisions, the company should give some support to attract them, let customers feel they are at home. After

customers buy the services or products, company should solve the problem that customers met or response customers' questions immediately. In this research, it consists of varieties of services, can contact staff immediately when have any problem, contain FAQs section, process to solve problem be quick, provide knowledgeable staff to solve problem, and staff can describe step to use and condition to use clearly.

4. Service security (SS)

It is defined as the freedom from danger, risk, or doubt. It involves physical safety, financial security and confidentiality. It consists of employees who instill confidence in customers, making customers feel safe in their transactions, employees who are consistently courteous and employees who have the knowledge to answer customer question. In this research, it consists of keep accurate record of transaction, provide security for transaction data and privacy, no problem during using service, feel safe in transactions, can check validity and detail of past transaction every time.

5. Ease of use (EU)

This is as the factor influencing the adoption of mobile banking, and related to an easy-to-remember URL address, well-organized, easy in site navigability, concise and understandable contents, terms and conditions. In this research, it consists of easy to find information in the system, website is easy to use, language is easy to understand, output format is easy to read, information and text are clear and easy to understand, provide clear instruction, and display output or transaction is quick.

6. Performance (PF)

This refers to product's primary operating characteristic which is based on functional requirement, not taste with is circumstantial preferences. Performance is the operating quality of each mobile banking service and feature offered by each bank. In this research, it consists of provide in multi-language, provide 24hours -7 days service, allow to transfer between bank, and provide online registration.

RESEARCH MODEL

From the literature review, a research model has been developed as shown in Figure 1. The six alternative hypotheses in the research are as follows:

H1: Safety reliability will have a significant impact on customer satisfaction.

H2: Transaction efficiency will have a significant impact on customer satisfaction.

H3: Customer support will have a significant impact on customer satisfaction.

H4: Service security will have a significant impact on customer satisfaction.

H5: Ease of use will have a significant impact on customer satisfaction.

H6: Performance will have a significant impact on customer satisfaction.

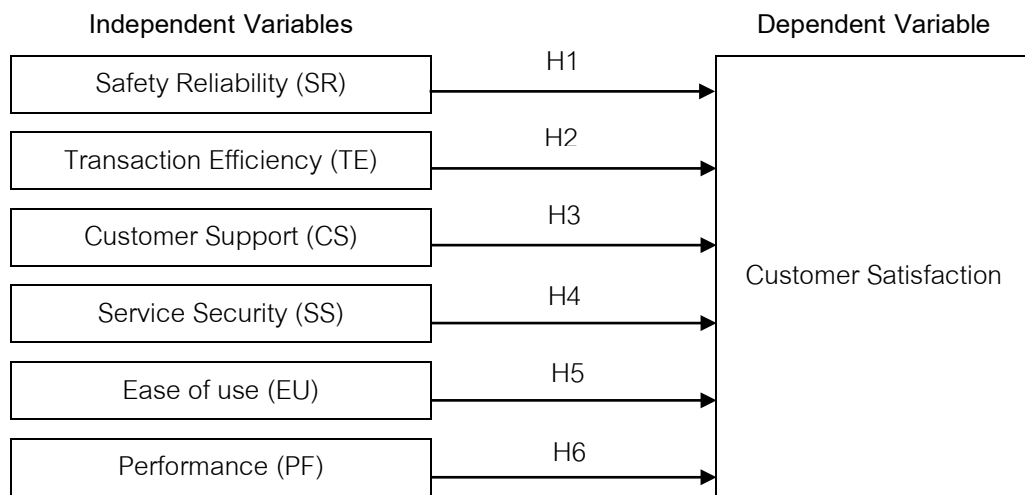


Figure 1 Research Model

RESEARCH METHODOLOGY

The survey method and the convenience sampling were used in collecting the sample data. Pre-test was conducted and measures the reliability with Cronbach's Alpha. The overall Cronbach's Alpha coefficient of survey instrument is 0.960, this guarantee that the instrument used, questionnaires, is the good tool for data collecting. The questionnaires were distributed to respondent who have been using mobile banking from October 2017 through December 2017 among top three banks in the Bangkok area as Kasikorn Bank, Siam Commercial Bank, and Bangkok Bank. A total of 450 respondents were participated in this study. Multiple Regression Analysis was employed to obtain the important determinants of mobile banking service quality that will have the impact on customer satisfaction.

RESULTS

First part of the results are descriptive summaries as shown in Table 1.

Table 1 Descriptive summaries classified by commercial bank

Demographics	Kasikorn Bank	Siam Commercial Bank	Bangkok Bank
Gender	Male (17.8%)	Female (22.4%)	Female (20.2%)
Age group	25-35 years (20.0%)	25-35 years (20.7%)	25-35 years (20.9%)
Education level	Bachelor (22.2%)	Bachelor (23.3%)	Bachelor (23.8%)
Occupation	Employee (18.7%)	Employee (18.8%)	Employee (17.1%)
Personnel Income per month	10,001-30,000 baht (17.8%)	10,001 - 30,000 baht (19.8%)	10,001 - 30,000 baht (19.1%)

Table 1 Descriptive summaries classified by commercial bank (continued)

Demographics	Kasikorn Bank	Siam Commercial Bank	Bangkok Bank
Main purpose of using (multiple response answer)	Money transferring (26.3%)	Money transferring (24.1%)	Money transferring (24.6%)
	Balance checking (20.3%)	Balance checking (22.1%)	Balance checking (18.1%)
Frequency of using for a month	Less than 4 times (12.7%)	Less than 4 times (13.6%)	Less than 4 times (15.3%)

Regarding to multiple regression analysis at the level of significance 0.05, it was used to find the key determinants of mobile banking service quality that will have the impact on customer satisfaction among three Thai commercial banks as presented from the Table 2 to Table 4. Any limitations and any assumptions in multiple regression analysis have already been considered and checked. The value of R^2 for each model is smaller than 50%. This indicates that there is rarely a strong associative relationship exists between customer satisfaction and the selected independent variables. However, it has been founded that, the F-value for each model has the significant at level of significance 0.05. This indicates that, the overall model was reasonable fit and there was a statistically significant association between customer satisfaction and the selected independent variables. The unstandardized coefficients indicates a partial change in the customer satisfaction due to one unit change in each of the independent variables while other things remain constant.

Moreover it has been found that, customer support determinant as staff can describe step to use clearly, is the most influential factor for customer satisfaction with the highest Beta value of 0.439. Moreover it also indicates that, process to solve problem be quick, transaction speed, no problem during using services, accuracy of transaction, providing of security for transaction data and privacy, providing 24hours-7days service, providing knowledgeable staff to solve problem, feel safe in transaction, and be able in checking validity and details of past transaction every time have also positive impact on the customer satisfaction of mobile banking.

Table 2 Summaries of parameter estimates of Multiple Regression Analysis for Kasikorn Bank

Determinants	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std.Error	Beta			
(Constant)	2.580	0.251		10.29**	0.00	
CS: process to solve problem be quick	0.117	0.030	0.364	3.94**	0.00	1.85
SS: accuracy of transaction	0.126	0.034	0.349	3.69**	0.00	1.94
SS: no problem during using	0.117	0.031	0.357	3.83**	0.00	1.88
SS: can check details of past transaction everytime	0.079	0.033	0.195	2.37**	0.019	1.46

Dependent Variable: customer satisfaction
 $R^2 = 0.335$, F-Value =18.129**, DW-statistic = 1.805, **Significant at $\alpha = 0.05$

Table 3 Results of Multiple Regression Analysis for Siam Commercial Bank

Determinants	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std.Error	Beta			
(Constant)	2.131	0.203		10.489**	0.000	
CS: provide knowledgeable staff to solve problem	0.085	0.042	0.267	2.012**	0.046	3.20
CS: staff can describe step to use clearly	0.130	0.040	0.439	3.21**	0.002	3.41
SS: feel safe in transaction	0.078	0.028	0.264	2.83**	0.005	1.58

Dependent Variable: customer satisfaction
 $R^2 = 0.199$, F-Value =12.106**, DW-statistic = 1.878, **Significant at $\alpha = 0.05$

Table 4 Results of Multiple Regression Analysis for Bangkok Bank

Determinants	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std.Error	Beta			
(Constant)	2.708	0.395		6.86**	0.000	2.25
SS: provide security for transaction data and privacy	0.167	0.054	0.332	3.11**	0.002	1.89
EU: transaction speed	0.198	0.054	0.358	3.66**	0.000	1.62
PF: provide 24hours-7days service	0.178	0.053	0.305	3.37**	0.001	

Dependent Variable: customer satisfaction
 $R^2 = 0.261$, F-Value =17.144**, DW-statistic = 1.890, **Significant at $\alpha = 0.05$

DISCUSSION AND CONCLUSIONS

Nowadays, the competition between the competitors of mobile banking is intense. Therefore each of banks should provide the best elements to customers. Each bank try to develop their services and mobile banking system, as much as possible, to match customer satisfaction. Banks should make effective decision in service development and marketing strategies for staying competitive advantage in this industry. Results of this study could suggest the strong points for each bank as:

Kasikorn Bank:- Strong points are “process to solve problem be quick”, “no problem during using services”, “accuracy of transaction”, and “can check validity and details of past transaction every time”.

Siam Commercial Bank:- Strong points are “staff can describe step to use condition to use clearly”, “provide knowledgeable staff to solve problem”, and “feel safe in transaction”.

Bangkok Bank:- Strong points are “transaction speed” and “provide security for transaction data and privacy”, and “provide 24hours-7days service” .

RECOMMENDATIONS

Multiple regression analysis is the one of forecasting techniques which the best fit model is explained with the high value of R^2 . In this study, the main objective is applying multiple regression analysis in order to determine the key determinants of mobile banking service quality that will have the impact on customer satisfaction. So the value of R^2 for each model is less 50%. However, any limitations and any assumptions in regression analysis should be considered and checked.

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