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INVESTIGATING THE IMPACT OF SERVICE QUALITY ON CONSUMERS' INTENTION TO USE MOBILE BANKING

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The mobile computing users grew explosively because the mobile devices became more affordable. In addition, Internet connection costs went down and network speed were faster. In light of this, banks began to provide Internet services for smartphone users to reduce staff costs. In early days, because of the low speed of mobile devices, poor quality of Internet connection, and limited function of mobile banking interfaces, the smartphone users were reluctant to use mobile banking systems. Recently, banks begin to provide the mobile banking service via Apps trying to attractive more smartphone users. However, the users began to concern about the Internet transaction security and reliability of mobile banking Apps. This study investigated the consumers' behavioral intentions toward mobile banking in five dimensions including tangibility, reliability, responsiveness, assurance, and empathy. The results indicated that the dimensions of service quality had significant positive effects on customer satisfaction except responsiveness. Furthermore, both customer satisfactions on mobile banking and service quality of mobile banking have positive influence on consumers' behavioral intentions to use mobile banking. The findings in this study were helpful for banks to improve their services via mobile banking systems in the future.

Keywords: Service Quality, Mobile Banking, Internet Banking, Behavioral Intention, Partial Least Square

INTRODUCTION

According to IDC report, the smartphones accounted for over 70% of mobile phone market share in Taiwan since the third quarter 2012. IDC also estimated that the smartphones would capture 88.3% market share of mobile phones and became the most important mobile device for mobile users in 2016. A research done by Morgan Stanley pointed out that the mobile device users would exceed desktop users before 2015. Banking industry is labor-intensive and very

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competitive. They began to develop Internet or mobile banking to cut done operation costs.

Previous TAM studies focused on evaluating consumers' intention to use the information systems, especially on the acceptance of new information technology. To the customers, they expect more from the mobile banking than traditional banking. Thus, it is very important for banks to understand the service qualities that customers cared and providing right products and services to their customers through mobile banking.

The purposes of this study were to explore the mobile banking customers' satisfaction through tangibility, reliability, responsiveness, assurance, and empathy. Furthermore, this study wanted to understand the relationships on both customer satisfactions to their behavior intentions and mobile banking service qualities to customer behavior intentions.

LITERATURE REVIEW

Mobile Banking

Kalakota and Robinson (2001) defined mobile banking as part of Internet banking. It provided not only banking related functions, but also the feature of mobile commerce. Through mobile banking, customers could use their mobile device to do fund transfer, account inquiry, and etc. Urban, Sultan and Qualls (2000) suggested website security and privacy should be reinforced to promote consumers' confidence on Internet banking. Swaminathan *et al.* (1999) believed that security of transaction was the key element to the e-commerce. If consumers' perceived transaction safety was higher or perceived risk was lower, their intention to purchase or use would be higher.

Service Quality

The researches about service quality were focused on defining and measuring the quality of tangible products before 1980. Parasuraman *et al.* (1985b) defined service quality as the comparison between consumer expectation and actual feelings. Lehtinen (1983) suggested that service was a serial of activities that provided and gave satisfaction to customers through interaction with service personnel or equipment. From the process of service, service quality composed of the process quality and the output quality that customers determined.

Juran (1974) categorized service quality into five constructs, which were software qualities, internal qualities, psychological qualities, and time qualities. Grönroos (1984) proposed that service quality could be divided into two dimensions, which are the technical quality and functional quality. Technical quality referred to the outcome of the service, while functional quality refers to the process that service was delivered. Sasser *et al.* (1978) believed service quality could provide customers internal and external beneficial quality, which include security, consistency, attitude, completeness, condition, availability, and training.

Parasuraman *et al.* (1985a) investigated banking, securities, credit card industry, and product maintenance and found that they all had similar evaluation standards for service quality. Sasser *et al.* (1978) developed SERVQUAL model proposes that customers evaluate the service quality based on five dimensions: reliability, responsiveness, assurance, empathy, and tangibility. The sample in this study was bank customers, so the SERVQUAL instrument was applicable. The researcher modified the SERVQUAL instrument based on previous

studies mentioned in the literature review to fit into the purposes of this study.

The SERVQUAL instrument consists of 22 statements for assessing consumer perceptions and expectations regarding the quality of a service. Perceived service quality results from comparisons by consumers of expectations with their perceptions of service delivered by the service providers (Zeithaml *et al.*, 1996). It can be argued that the factor underpinning the delivering of good perceived service quality is actually meeting the expectations of the customers. Thus, excellent service quality is exceeding the customers' expectations.

Consumer Satisfaction

Service quality was one of the reasons that created customer satisfaction (Cronin and Taylor, 1992). Perceived service quality could increase customer satisfaction (Parasuraman *et al.*, 1988). Drucker (1950) was the first to propose the concept of customer satisfaction. The mission of any corporation should create satisfied customers. Cardozo (1965) discussed the subject of customer expectation and satisfaction. Parasuraman *et al.* (1988) proposed customer expectation theory, which suggested customer satisfaction resulted from the differences between expectation of products or services and actual recognition. Tangible and intangible service commitments, reputation, and past experience would impact consumer expectation.

Kotler (2003) defined customer satisfaction as "satisfaction is a person's feeling of pleasure or disappointment resulting from comparing a product is perceived performance (or outcome) in relation to his or her expectations." Cina (1989) considered customer satisfaction resulted from the differences between expectation and actual experience. Satisfaction occurred when product experience was as well as expected (Spreng, 1993). Consumer satisfaction was an evaluation process from product acquiring or consumption experience (Oliver, 1981), or an attitude resulted from consumption (Woodside *et al.*, 1989). Also, consumer satisfaction was determined by the agreement whether the actual products or services were as good as they expected (Hempel, 1997).

Lin (2007) pointed out that consumer satisfaction was the evaluation of products or labor according to past experience. When the services were higher than the expectation, consumer would feel very satisfied; otherwise, consumer would be unsatisfied (Joewono and Kubota, 2007). This study adopted the definition suggested by Zeithaml and Bitner (2000) that customer expectations were beliefs about products or services that served as standards against which product or service performances were judged.

Behavior Intention

Ajzen and Driver (1991) believed that behavior is determined by the intentions of individuals. The concepts of behavior intention came from the attitude theory in psychology and consumer behavior. Attitudes were interpreted in terms of three components: affective, behavior, and cognitive. Engel *et al.* (1995) suggested that consumers evaluated products or services based on their belief or feelings. Consumers' attitude toward products or services affected their behavior intention and their behavior intention determined their behavior.

Zeithaml *et al.* (1996) studied the influence of service qualities to organization profits and

proposed a service quality, behavior intention, and financial results model. They believed that behavior intention and service qualities were interrelated. Providing better services resulted in positive behavior intention. In addition, behavior intention affected the final behavior influence and corporation profit. Brady *et al.* (2001) also pointed out that the relationship between service qualities and behavior intention was impacted by overall value of services and satisfaction.

RESEARCH FRAMEWORK AND HYPOTHESES

Based on five dimensions of service qualities, customer satisfaction, and behavioral intentions, this study designs a new hybrid model and purposes seven research hypotheses as shown in Figure 1 and Table 1.
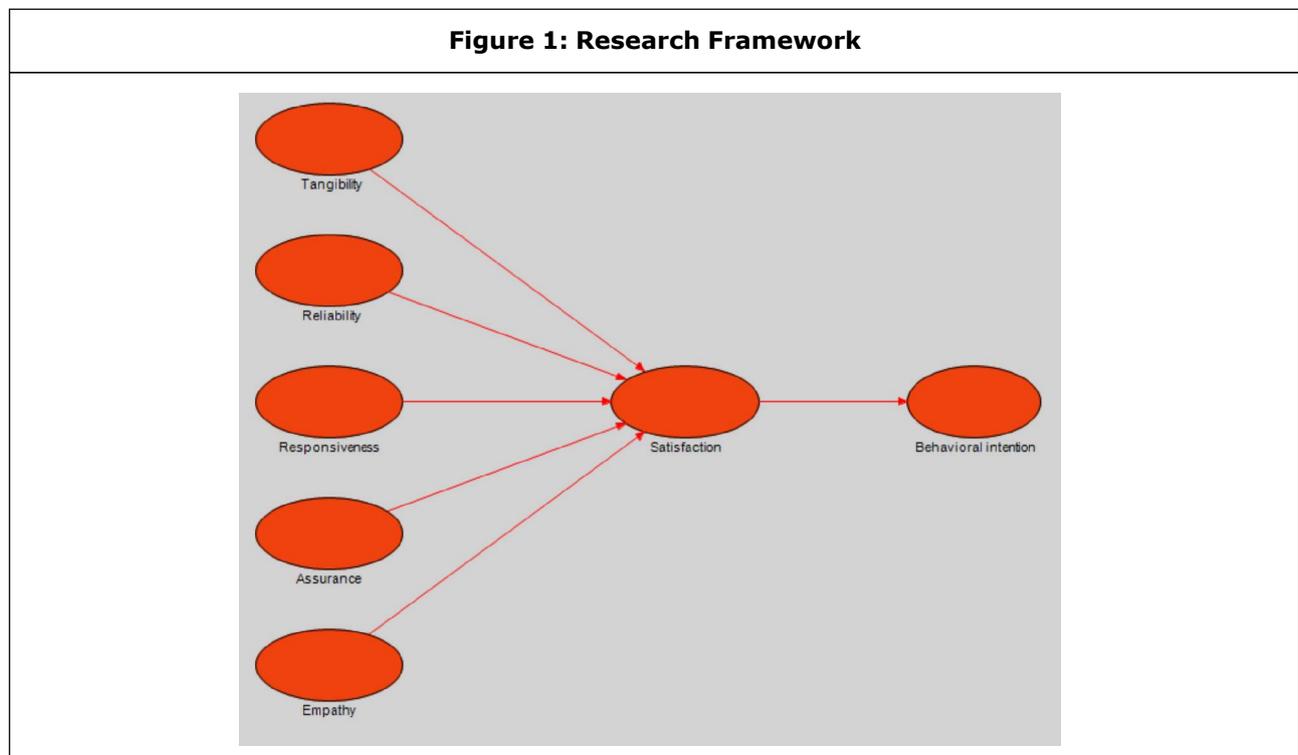
DATA ANALYSIS

Outer Model Analysis

Figure 1: Research Framework

Table 1: Summary of Research Hypotheses

Hypothesis

H_1:   *Tangibility of the service quality has the positive effect on customer satisfaction towards mobile banking*

H_2:   *Reliability of the service quality has the positive effect on customer satisfaction towards mobile banking*

H_3:   *Responsiveness of the service quality has the positive effect on customer satisfaction towards mobile banking*

H_4:   *Assurance of the service quality has the positive effect on customer satisfaction towards mobile banking*

H_5:   *Empathy of the service quality has the positive effect on customer satisfaction towards mobile banking*

H_6:   *Customer satisfaction has the positive effect on behavioral intention towards mobile banking*

Table 2: Latent Variable Correlations							
	Assurance	Behavioral Intention	Empathy	Reliability	Responsiveness	Satisfaction	Tangibility
Assurance	1.00						
Behavioral intention	0.62	1.00					
Empathy	0.76	0.47	1.00				
Reliability	0.77	0.55	0.73	1.00			
Responsiveness	0.83	0.45	0.79	0.73	1.00		
Satisfaction	0.85	0.69	0.78	0.77	0.72	1.00	
Tangibility	0.72	0.67	0.54	0.65	0.53	0.71	1.00

Table 3: Factor Loadings and Cross Loadings							
	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Satisfaction	Behavioral Intention
H1A1	0.93	0.59	0.44	0.65	0.49	0.66	0.64
H1A2	0.93	0.61	0.54	0.68	0.52	0.66	0.61
H1B1	0.54	0.80	0.51	0.60	0.59	0.62	0.43
H1B2	0.45	0.78	0.51	0.56	0.45	0.53	0.37
H1B3	0.51	0.86	0.61	0.59	0.62	0.62	0.41
H1B4	0.61	0.86	0.73	0.77	0.73	0.76	0.59
H1C1	0.38	0.70	0.81	0.65	0.68	0.62	0.36
H1C2	0.46	0.58	0.87	0.76	0.65	0.65	0.43
H1C3	0.43	0.64	0.89	0.71	0.74	0.57	0.33
H1C4	0.52	0.57	0.85	0.72	0.64	0.60	0.43
H1D1	0.69	0.66	0.66	0.87	0.60	0.75	0.64
H1D2	0.68	0.70	0.81	0.92	0.70	0.77	0.54
H1D3	0.63	0.71	0.71	0.88	0.65	0.75	0.50
H1D4	0.53	0.67	0.77	0.88	0.75	0.73	0.53
H1E1	0.54	0.73	0.74	0.76	0.89	0.75	0.48
H1E2	0.38	0.53	0.64	0.56	0.86	0.58	0.33
H1E3	0.49	0.66	0.70	0.68	0.89	0.70	0.41
H21	0.64	0.72	0.67	0.77	0.75	0.95	0.65
H22	0.63	0.76	0.69	0.78	0.72	0.92	0.61
H23	0.71	0.69	0.65	0.82	0.71	0.93	0.67
H31	0.58	0.47	0.42	0.56	0.43	0.64	0.93
H32	0.55	0.45	0.36	0.51	0.38	0.57	0.91
H33	0.71	0.59	0.47	0.64	0.48	0.69	0.92

This study applied SmartPLS 2.0 (M3) to analyze the empirical data. We followed a two-stage analysis process including outer model analysis and inner model analysis. Outer model mainly examined the reliability and convergent validity, whereas inner model mainly evaluated the hypothesis testing.

Convergent validity is achieved if different questionnaire items are measured into the same construct. This study followed three criteria from Fornell and Larcker (1981) including standardized factor loadings for each indicator, reliability

(composite reliability and Cronbach's alpha), and the value of Average Variance Extracted (AVE). As shown in Table 3, all standardized factor loadings are large than 0.7. As shown in Table 4, Cronbach's alpha, composite reliability and AVE are large than 0.7, 0.7, and 0.5, separately. Therefore, the empirical data is satisfied in convergent validity and reliability.

Discriminant validity can be observed using the cross loadings of different constructs. As shown in Table 3, each standardized factor

Table 4: Reliability and AVE			
Construct	Composite Reliability	Cronbach's Alpha	AVE
Tangibility	0.92	0.84	0.86
Reliability	0.90	0.84	0.68
Responsiveness	0.91	0.87	0.73
Assurance	0.93	0.90	0.78
Empathy	0.91	0.85	0.78
Satisfaction	0.95	0.92	0.87
Behavioral intention	0.94	0.91	0.85

Table 5: Summary of Hypotheses Testing Results			
Hypothesis	Standardized Regression Weight	t-value	Result
H_1: *Tangibility of the service quality has the positive effect on customer satisfaction towards mobile banking*	0.16**	3.42	Supported
H_2: *Reliability of the service quality has the positive effect on customer satisfaction towards mobile banking*	0.18*	3.14	Supported
H_3: *Responsiveness of the service quality has the positive effect on customer satisfaction towards mobile banking*	-0.12*	2.14	Not Supported
H_4: *Assurance of the service quality has the positive effect on customer satisfaction towards mobile banking*	0.47***	7.39	Supported
H_5: *Empathy of the service quality has the positive effect on customer satisfaction towards mobile banking*	0.30***	5.36	Supported
H_6: *Customer satisfaction has the positive effect on behavioral intention towards mobile banking*	0.69***	12.45	Supported
Note: * p-value<0.05, **p-value<0.01, *** p-value<0.001; Bootstrapping Algorithm (Cases= 260; Samples= 1000).			

loadings are higher than cross loadings. This result can be claimed that this study is satisfied in discriminant validity.

Inner Model Analysis

Inner model is mainly set to assess the hypotheses testing applying SmartPLS 2.0 (M3). We examined seven hypotheses proposed in this article. Based the entire samples, only one hypothesis is not supported (H3 is not supported), while the remaining hypotheses are supported at the 95% confidence level (H1, H2, H4 to H7). The hypotheses testing results is shown in Table 5.

CONCLUSION

Findings

This study explored whether the service quality of mobile banking had influence on customers' satisfaction and their behavior intention. Results of this study showed that service quality in terms of tangibility, reliability, assurance, and empathy had significant effects on customer satisfaction. The customer satisfaction with the mobile banking had the positive effects on consumers' behavioral intentions to use mobile banking. In addition, the service quality of mobile banking also had the positive effects on consumers' behavioral intentions to use mobile banking. The path analysis results of this study were shown as Table 5.

There were three major findings in this study. First, mobile banking was acceptable to bank customers. When developing new banking services, banks could integrated more functions of mobile devices such as camera and GPS, to attractive more mobile users. Mobile banking users cared about how much banks valued their customers. If the banks could consider more about the need of their customers when providing

new mobile banking services or costumed services, they could increase their customers' satisfaction.

Second, customers were very concern about the transaction safety and system stability when using mobile banking. Banks should do everything possible to main a sound and safe mobile banking transaction platform to increase their customer satisfaction. When mobile baking, customers needed a trustable banks that could give them fully support when irregular transaction occurred. The more they trusted the banks, the higher the satisfaction they had.

Third, the faster assistance that banks could provide to their mobile banking users, the more positive feeling the customers could have about the banks' reactivity. That would increase banks customers' satisfaction and result in higher behavior intention. Thus, if banks wished to increase their mobile banking users' behavior intention, they should increase their satisfaction first. The better quality of mobile transaction the banks had, the higher satisfaction their customers have. The banks should enhance their service quality if they expected to increase their customers' behavior intention.

Practical Contribution

This study explored the relationship between behavior intention and service quality, which was tangibility, reliability, responsiveness, assurance, and empathy. Customers' satisfaction would be higher if banks could provide better service quality. Banks could increase their customers' satisfaction by improving the five constructs mentioned above. For example, if banks planned to provide new mobile banking services, they could adopt these five constructs as quality control standards.

The most common use for mobile banking users was fund transfer and account inquiry. Banks could provide more attractive functions to their mobile banking users. For example, simplified user interface or customized account query rules were useful for small screen mobile device users. To reduce customer complains, banks should actively inform their customers the processes and time needed for certain services. If transaction errors occur, banks should resolve the problems quickly and provide assistance to the confused mobile banking users.

When banks upgraded their system programs, system stability and transaction security should be maintained. Banks were responsible for all the liabilities if losses occurred due to the system errors. Mobile banking users cared most about the transaction security and accuracy, so banks with responsibility resulted in higher satisfaction of mobile banking users.

Research Limitations and Future Works

Due to time and budgetary constraints, this study used convenience sampling that questionnaire was collected from several major bank users. The results of this study might not be inferred to other area with different nationality or cultures.

There were some suggestions for future studies. This study used quantitative methods to explore the relationship between service quality and customers' satisfaction and behavior intention. Qualitative method could be applied in further studies to understand why the thoughts and need of mobile banking customers. This study used convenience sampling due to time and budgetary constraints. A larger scale of survey to customers of banking industry was recommended to understand different aspects of user groups.

The service quality defined in this study contained only five constructs, which was tangibility, reliability, responsiveness, assurance, and empathy. More constructs could be added in the research model to have full understanding the reason why customers using mobile banking services. The progress of mobile banking would move to a more comprehensive and more integrated financial services in the future. Future studies could focus on the innovation of mobile banking services that suitable for mobile device users such as customized financial services.

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