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Developing Customer Positive Word-of-Mouth and Loyalty in Mobile Banking Services by Considering the Role of Trust and Security

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***Abstract*—** The number of people involved in electronic commerce is growing. Mobile banking, which was introduced by developing mobile technology, is a newly adopted technology in electronic commerce. Mobile banking is accepted as part of the daily lives of people, but focusing on merely adopting this technology is insufficient. Managers should go far beyond to increase the number of their customers. In addition, increasing the number of customers in an online business without considering several factors is difficult. Therefore, the importance of investigating the development of customer loyalty and positive word-of-mouth (WOM) as two major concerns of online managers is remarkable. Trust and security are the two principal technical factors cited by most researchers in adopting mobile banking needs. Several studies have focused on the relationships between customers and banks through mobile technologies, but research that analyzes the formation of both concepts is scant. Hence, this paper investigates the relationship of security and trust for developing customer loyalty and positive WOM in mobile banking services. Data are collected from mobile banking users in Malaysia through questionnaires. The data are subsequently analyzed through SPSS and LISREL software. Results indicate a direct and positive relationship between security and trust in developing customer loyalty and positive WOM.

Keywords – ***Mobile Banking, Word-of-Mouth, Customer Loyalty, Trust, Security***

1. INTRODUCTION

Reduced search expenses and high power obtained by customers through the Internet are the main factors in growing competitiveness in electronic commerce, which involves several organizations and people. Increasing the number of customers in online commerce without considering several factors is difficult. Therefore, the importance of investigating the development of the two major concerns of online managers, namely, customer loyalty and positive word-of-mouth (WOM), defined as "written or oral recommendation by a satisfied customer to the prospective customers of a goods or service," is obvious (Keiningham et al., 2007). In fact, managers have conventionally documented the overall significance of these concerns; as a result, marketing studies have extensively analyzed both WOM (e.g., Bansal and Voyer, 2000; Chung and Darke, 2006) and loyalty (e.g., Dick and Basu, 1994; Hallowell, 1996; Oliver, 1999; Lindestad and Andreassen, 1998). In addition, mobile banking is one of the new technologies that were introduced by mobile technology. As a newly adopted technology in electronic commerce, mobile banking has become accepted as part of daily life. However, the importance of security in mobile banking cannot be neglected as a key factor for customers. Several studies have focused on the relationships between banks and customers through mobile technologies, but research that analyzes the formation of both concepts is scant. Hence, this paper investigates the relationship of security and trust for developing customer positive WOM and loyalty in mobile banking services. With these considerations, first, we review the relevant literature on the four variables included in the study. Second, we formalize the hypotheses. Third, we explain data collection and measures for validation. Subsequently, we present the main results. Finally, we present the major conclusions of the study and propose suggestions for future work.

2.0 Mobile Technology and Banking Services

The principal factors in the growing competitiveness in electronic commerce are the large number of organizations involved in electronic commerce, high power obtained by consumers, and reduced search costs with the presence of the Internet. The routine activities of humans are encompassed by the development of e-communication. The professionals in this area attempt to use the current technology to facilitate daily activities and aid the stakeholders of industries in rapidly reaching their customers with minimal costs and without place and time constraints. Therefore, they can buy and sell their products and offer services. Banking service is one of the latest activities that utilize e-services through the Internet and mobile technology. Mobile banking is one of the new technologies introduced during the development of mobile technology.

Mobile banking can be more widely used by bankers than electronic banking because of the higher penetration of cell phones than personal computers (Ondiege, 2010). Moreover, cell phones increase the quality of services because customers can perform their financial activities without time and place constraints. Hence, using mobile phones for banking activities is beneficial for both customers and banks, inducing a powerful relationship between banks or other financial institutions and customers (Laukkanen, 2007). Investigation has indicated that only 30% of the housewives in the United States use cell phones for banking. Asian and European countries have similar figures in terms of the use of mobile banking services (Gupta, 2005). Cell phones are currently the most common tools of communication in Africa (ITU, 2007). Therefore, mobile banking has been recognized as a newly adopted technology in electronic commerce. However, increasing the number of customers in online business without considering several factors is difficult. Therefore, the importance of investigating the development of customer positive WOM and loyalty as two major concerns of online managers is obvious. Keeping these considerations in mind, the literature of this paper will be organized as follow: We investigated the definition of mobile banking as a domain of this study and reviewed the concepts of trust, as well as security and its dimensions, in mobile banking. We also reviewed studies on the development of WOM and loyalty in the field of banking, especially mobile banking.

2.1 Mobile Banking

Banking service is one of the latest activities in electronic services through the Internet and mobile technology. Mobile banking services empower customers by providing them with a sense of freedom. Customers can perform banking activities within their convenience. Different from modern banking, conventional banking requires a customer to be physically present in a bank during operating hours. However, mobile banking allows customers to perform banking activities anywhere.

Mobile banking is a system that enables customers to perform various financial transactions via mobile devices, such as mobile phones and tablets. The first mobile banking service offered is SMS banking, which was followed by WAP support banking application in 1999.

Hu et al. (2008) defined mobile payment and banking as the use of mobile phones to buy merchandise, pay bills, and transmit assets. Luo et al. (2010) defined mobile banking as *"an innovative method for accessing banking services via a channel whereby the customer interacts with a bank using a mobile device."*

2.1.1 Factors Affecting Mobile Banking Adoption

Several researchers have explored mobile banking adoption among customers (Goswami and Raghavendran, 2009; GU et al., 2009). The factors that affect mobile banking adoption are generally categorized in two types, namely, user behavioral factors and system characteristics (technical) factors.

Most of the studies on user behavioral factors are available in the marketing literature. By contrast, the bulk of research on system characteristics or technical factors is found on information system and other related technical literature. Table 1 summarizes related studies that investigated the factors that affect mobile banking adoption. In most studies, trust and security have been mentioned as two principal technical factors in adopting mobile banking. These studies have increased our understanding of mobile banking adoption behavior, but they failed to address the issue of trust formation and security as two major technical factors cited by most researchers. Lee and Chung (2009) and Kim et al. (2009) noted that the lack of trust is one of the most common reasons that prevent customers from using mobile banking.

TABLE 1: Factors affecting mobile banking adoption among customers

Title	Author(s) (year)	Factor(s)
Factors Affecting the Adoption of Mobile Banking in New Zealand	Malhotra (2011)	Trust, Usefulness and Security risk
Factors Affecting the Use of Internet Banking; the Case of Northern Cyprus	Altun (2012)	Trust , Perceived web security
An Empirical Study on Mobile Banking Adoption: The Role of Trust	Liu *et al.* (2009)	Trust
Consumer acceptance of internet banking	Grabner-Kräuter and Faullant (2008).	Trust
Mobile Banking in India: Practices, Challenges	Goyal *et al.* (2012)	Security
Factors Affecting Customer Loyalty of Using Internet Banking in Malaysia	Yee and Faziharudean (2010)	Loyalty
Modeling User Trust and Mobile Payment Adoption: A Conceptual Framework	Eze *et al.* (2008)	Trust
Assessing Factors Influencing the diffusion of Mobile Banking in South Africa	Borg and Persson (2009)	Innovation features, Social factors, Customer perception of the innovation
An investigation of consumer acceptance of M-banking	Wessels and Drennan (2010)	Perceived usefulness, perceived risk, cost, and compatibility
Determining Critical Success Factors of Mobile Banking Adoption in Malaysia	Mohd Daud *et al.* (2011)	Perceived usefulness, perceived credibility and awareness

a. Security

Some terms and concepts in mobile technology have key role in defining security. One of these terms is confidentiality which relates to the prevention of information disclosure to unauthorized individuals or systems. Exploits on mobile devices could disclose personal information to attackers. The other important term is authentication which is necessary to validate who are the parties involved on a transaction or communication and if they are, who they claim to be. In mobile banking transactions, it is fundamental for users to have the guarantee that the process is carried out by a valid and official bank, not to a fake institution (or individual). Banking managers believe security and convenience are the key factors for the growth of mobile commerce and mobile banking. Several mobile applications offer a level of convenience and create security for users; meanwhile, numerous security risks threaten users. Without the need for an additional browser or third-party application, mobile banking apps provide a direct link from the device to the bank. In this manner, banks can control the security of customer interactions. These apps are developed particularly for a specific bank and its customers. Therefore, the bank can provide a secure connection through SSL encryption and two-factor authentication that meets the unique requirements of the institution. Many efforts have been done in previous studies for identifying security. Several studies focused on the sub-constructs of this dimension in order to investigating this factor more accurately. Researchers have investigated security based on three dimensions, namely, privacy, reliability, and safety (Monica, 2011; Jun and Cai, 2001). Privacy of user information is a particularly challenging issue as mobile devices are much more personalized and tied to the user's identity while safety in mobile banking means in what extent the mobile banking is protected by encryption and digital certificates and finally reliability means the stability of performance and delivery service properly and better than the first time and meets the bank of what has been promised to the client, and this includes:

- The accuracy of the accounts, files and errors do not occur.
- Providing banking service properly.
- To provide service in a timely manner.
- The stability of the performance level of service (fang et al., 2013).

b. Trust

Trust is defined differently across research areas. In general, trust refers to the belief that the promise of another can be relied on. Trust is considered one of the most important factors in mobile banking. Money transactions in mobile banking are conducted online. Therefore, face-to-face contact is impossible in mobile banking, which is the reason that trust is important in mobile banking. Moorman et al. (1993) defined trust as *"the willingness to rely on an exchange partner in whom one has confidence."* The three types of trust are dispositional, system-based (E-trust), and interpersonal trust. Grönroos (2000) categorized trust into generalized, system, personality-based, and process-based trust. Several previous studies have reported the important role of trust in the acceptance of technology and online purchasing usage (Lin, 2011). Thus, mobile banking service providers should help customers reduce the uncertainty and potential risk to increase mobile banking adoption by customers.

c. Word-of-Mouth

WOM is an oral or written recommendation by a satisfied customer to prospective customers of goods or services (Keiningham *et al.*, 2007). Creating demand is one of the largest challenges faced by marketers in the current competitive market. The three major types of traditional communication strategies are advertising, sales promotion, and public relations. Communication channels are either non-personal or personal. Magazines, radio and television, online services, and websites communicate at a non-personal level (Kotler and Armstrong, 2006).

WOM tactics are regarded as another variety of personal communication. WOM has a better impact on product sales and service credibility because it is authentic and provided by people who have used the product or service. WOM is especially in important sales. It affects sales because most customers select *"informal and personal communication sources in making purchase decisions rather than formal and organizational reasons such as advertising campaigns"* (Bansal and Voyer, 2000). We aim to demonstrate the importance of positive WOM in financial services, especially by focusing on mobile banking. The precise importance of trust and security in developing WOM as the outcome of satisfaction has not been established and thus requires further investigation.

d. Loyalty

Loyalty is considered *"a positive evaluation of, or a felt commitment to, an object that is, a secret mental state which is reflected in the behavior towards the object"* (Magi, 1999). Moreover, affective loyalty has several interpretations. Effective loyalty is defined as the intention of clients to consider the bank for upcoming transactions, whereas affective loyalty describes the extent of the loyalty of a customer to his or her favorite banking brand (Methlie and Nysveen, 1999). Loyalty concept is also another aspect of trust in services (Bloemer et al., 1998). Loyalty can be defined as *"a blend of both attitude and behavior"* (Pritchard, Havitz, and Howard, 1999). The attitudinal definition of loyalty refers to a state of mind. The behavioral meaning of loyalty pertains to the continued customer trips to the bank. However, Bhatty et al. (2001) argued that repeat business is not certainly a certain sign of loyalty. Casalo et al. (2008) investigated the role of website usability and customer satisfaction in customer loyalty and WOM in electronic banking services.Their research revealed that satisfaction with previous interactions with the bank website had a positive effect on both customer loyalty and positive WOM. In addition, website usability was found to have a positive effect on customer satisfaction and, as expected, loyalty was also significantly related to positive WOM.

3. Hypothesis Development and Research Model

In Summary the following hypotheses have been formulated according to the aforementioned literature to investigate the relationship among mobile banking mentioned factors:

H1. Security is directly and positively related to the levels of positive WOM in mobile banking.

H2. Trust is directly and positively related to the levels of positive WOM in mobile banking.

H3. Security is directly and positively related to the level of customer loyalty in mobile banking.

H4. Trust is directly and positively related to the levels of customer loyalty in mobile banking.

Finally the conceptual framework of this paper formed based on the hypothesis designed in order to investigate the relationship of security and trust in customer loyalty and positive Word-of-Mouth. As it mentioned before the reason for selecting and focusing on these variables is mainly because of their importance and finding their unknown relationship. In addition and as it mentioned before in most previous research, the researchers investigated security based on three dimensions of privacy, reliability and safety. Furthermore the behavioral and attitudinal loyalty which cited in most research selected as forming components of loyalty. The right side of the model is formed based on customer loyalty and WOM as two main outcomes of satisfaction which help us in seeking our main objective.

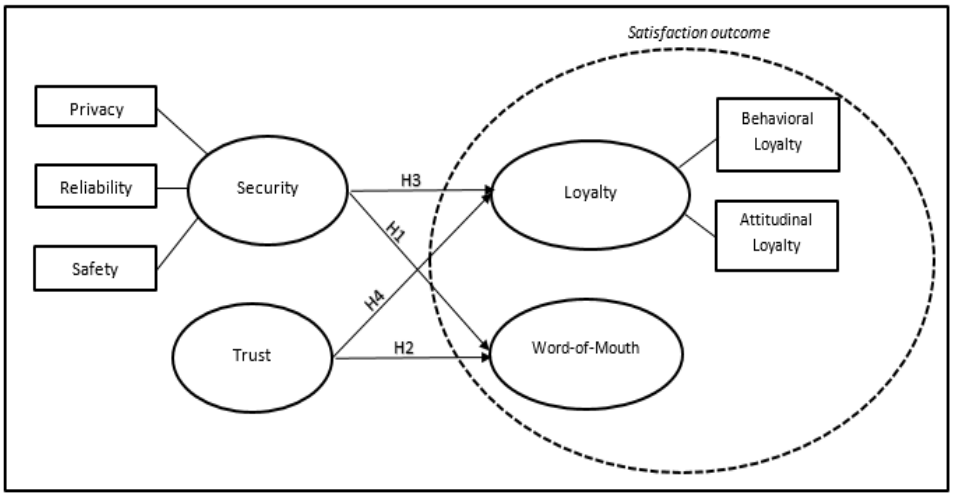

FIGURE 1: Proposed model of this research

4. Research Method

An optimal sample size is important to draw meaningful deductions in a study. A large sample size can become administratively unwieldy to handle, while a small one could give inaccurate results. It is therefore vital to select a sample size that determines a statistically significant outcome. It is also important to ensure that the sample selected reflects an unbiased opinion. For this study the constraints of time and cost were important while making a sample selection. In order to conduct this study the questionnaire designed based on the proposed model and data are collected from the CIMB mobile banking customers in Malaysia through questionnaires. Based on the existing literature a total of 230 respondents were selected constituted the sample for the research. Table 2 shows the profile of the respondents. The questionnaire for the study is developed according to the Likert scaling technique. The respondents are asked to select the response for each statement in a multiple-item scale ranging from “strongly agree” to “strongly disagree.” Linear Structural Relations (LISREL) is used for analyzing the data. Developed by Karl Jöreskog in the 1970s, LISREL analyzes the mean and covariance structure. LISREL is an easy-to-use program for visual structural equation modeling.

Table 2: Respondent's Profile

		Frequency	Percent
Sex	Male	150	65
	Female	80	35
Age	18-24 years old	23.5	54
	25-34 years old	63	145
	35-44 years old	12	27
	Above 44	1.5	4
Online Shopping Frequency	Never	41	17.8
	1-4 times in a month	144	62.6
	5-8 times in a month	26	11.3
	9-12 times in a month	6	2.6
	Above 12 times in a month	13	5.7
Frequency Usage of Mobile banking	Never	16	7
	1-4 times in a month	82	35.7
	5-8 times in a month	65	28.3
	9-12 times in a month	37	16.1
	Above 12 times in a month	30	13

a. Validation and Reliability of Measures

Reliability analysis was conducted to ensure the reliability after collecting the questionnaires. In this regard, the Cronbach's alpha coefficient of each variable was calculated using SPSS 16. The values are higher than 70%. Therefore, the reliability of the instruments is high. The internal consistencies of all of the variables are considered acceptable because they exceed 0.70, signifying tolerable reliability. The validity of research can be established through different methods. Content validity is used in this study. Content validity refers to the extent to which a measure represents all of the facets of a given construct. This method ensures that the instrument is suitable for measuring based on its number of questions for evaluating the measured variable. Confirmatory factor analysis was conducted using LISREL version 8.54 to verify the uni-dimensionality of scales for each construct and to validate the measurement model (Hyun, 2009). Table 3 shows the goodness-of-fit of the model.

TABLE 3: Model goodness-of-fit

No	Indices	Dimension	Accepted level	Result
1	χ^2/df	2.89	<3	satisfactory
2	**RMSEA**	0.072	<0.1	satisfactory
3	**RMR**	0.061	Near to 0	satisfactory
4	**NFI**	0.93	> 0.90	satisfactory
5	**NNFI**	0.94	Near to 1	satisfactory
6	**CFI**	0.94	>0.90	satisfactory
7	**RFI**	0.96	>0.90	satisfactory
8	**IFI**	0.95	>0.90	satisfactory
9	**GFI**	0.90	>0.90	satisfactory
10	**AGFI**	0.81	>0.90	satisfactory

5. Results and Analysis

This section presents the results of testing the structural links of the research model using SPSS and LISREL. Table 4 indicates the significant values and standardized coefficients for the relationship between the variables of the model. Figure 2 shows the conceptual framework based on the obtained significant values and standardized coefficients.

TABLE 4: Results of hypothesis analysis

Relationship	Significant Value	Standardize coefficient	Result
Trust and Loyalty	2.41	0.19	Accept
Security and Loyalty	6.93	0.79	Accept
Trust and Word-of-mouth	2.59	0.20	Accept
Security and Word-of-mouth	7.89	0.73	Accept

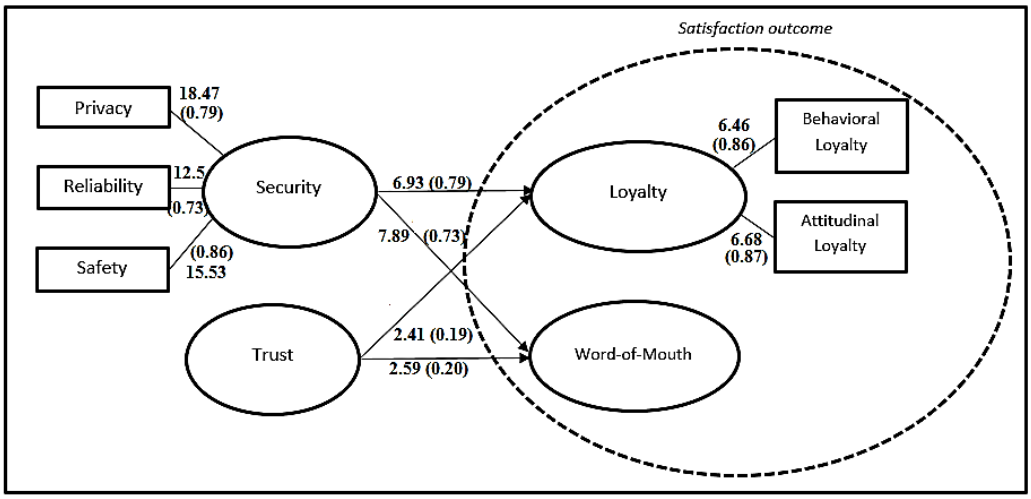

FIGURE 2: Conceptual framework based on the obtained significant values and standardized coefficients

As it mentioned before and based on the current literature, most of the studies that analyze the formation of effecting factors in relationship between customers and mobile banking have been conducted on traditional distribution channels and as a result, the contribution of this study is to investigating the aforementioned problem in the mobile banking context. Although we discuss more about the results of this study in conclusion but based on Figure 2, Security and Trust has more effect on word-of-mouth compare to loyalty. (The significant value between security and WOM is 7.89 while this value between security and loyalty is 6.93. The same comparison is available between trust and two other factors). In addition privacy is the most effecting factor in formation of security while safety and Reliability have the second and third rank respectively. Finally based on 2, attitudinal and behavioral loyalty has almost the same significant value therefore consideration need to be almost same for both of these concepts in focusing mobile banking.

6. CONCLUSION

This study investigated the relationship of two major effective factors of mobile banking, namely, security and trust, in developing customer loyalty and positive WOM in mobile banking. Four main hypotheses were formulated. These

hypotheses were created based on the relationships between independent and dependent variables in the conceptual model of this research. For our first hypothesis, we investigated the relationship between security and loyalty in the context of mobile banking. For the second hypothesis, we examined the relationship between security and WOM in the context of mobile banking. For the third hypothesis, we explored the relationship between trust and WOM in the context of mobile banking. Based on the path analysis, we determined a direct and significant relationship between trust and WOM. For the final hypothesis, we investigated the relationship between trust and loyalty in the context of mobile banking. Based on the path analysis, we also established a direct and significant relationship between these variables. Therefore, all of the hypotheses were supported by the results of the analysis.

We conducted a case study of mobile banking customers of CIMB BANK in Malaysia. Questionnaires were distributed to local and international students and staff of University Technology Malaysia. The sample used had a skew toward academic people. Therefore, these findings may not be representative of the entire population of potential mobile banking users. Hence, future research can use a larger sample that represents bank customers.

Second, analyzing the effects of other Internet access methods on customer loyalty and positive WOM when individuals and banks interact is an interesting direction to extend the present research. Third, future studies can focus on factors that affect mobile banking to help practitioners apply the results of the present research based on their constraints in time, cost, and other factors. Finally, we focused on several important factors, but factors that affect customer loyalty and positive WOM are not limited to the ones discussed in this study. For example, privacy, website design and usability, and reputation can also affect the level of positive WOM and loyalty in mobile banking. Hence, future work can analyze customer loyalty and positive WOM development along with other factors.

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