

Conference Paper

The Influence of Innovation Attributes and Level of Trust on Mobile Banking Adoption

Endah Dian Purwati, Noorlaily Soewarno, and Isnalita

Universitas Airlangga

Abstract

The rapid progress and development of information technology has affected the banking industry. The main priority of the Bank is not only about banking but also about services supported by large investments in the field of Information Technology. And Mobile banking is one manifestation of the progress of these technological developments. This research is about two points, first point is attribute innovation that customers need to adopt mobile banking and the second points is trust factors desired by customers from mobile banking providers in order to adopt the service. This research also study about how these two things affect the attitude of the customer and the value of customer to adopt mobile banking. So that research can be a reference for mobile banking provider to develop their services for customer. Because there are various advances in technology that exists today, customer desired not only easy of use but also compatibility Because some telecommunication companies and online sales agencies offer similar functionality to mobile banking. proven in this research is what consumers wanted by the customer is the relative advantage that can be offered by the bank and also the integrity confidence of the bank itself against customer. Thus it is expected that banks can continue to innovate to provide the best service desired by customers, by developing the field of information technology.

Corresponding Author:

Endah Dian Purwati

endahdianpurwati@gmail.com

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1. Introduction

Today, the rapid development of information technology has affected the banking industry, almost all banks compete to provide the best service for their customer. Convenience and customer satisfaction are goals for them to be achieved. Innovation for innovation continues, so customers from the bank can feel the facilities provided, with technological advances, their customer no longer need to queue long for do transaction at the Bank.

There are an important needs for business managers and business practitioners to understand how to manage this important organizational function. Managing information systems and technologies that support today's modern business processes is

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a big challenge for business managers, technology and information staff and business practitioners. So the main priority of the Bank is not only about banking but also about services supported by big investment in Information Technology. Communication devices is one example of technological developments that are currently also used by the banking sector. One of the accesses provided is mobile banking that is easy to use, and real time and for using that applications is very familiar, because now everyone has a mobile phone.

Mobile banking is one manifestation of the advancement of these technological developments, communication devices is one example of technological developments that are currently also used by the banking sector. Nowadays mobility and life demands are getting higher so it makes us to do banking transactions quickly anywhere, advances in information technology have affected the banking industry. With the aim of improving customer service, mobile banking is one of the services provided by banks to enable customers to transact via mobile phones. This service facility is very helpful to the needs of customers who have mobility and busyness are quite high, in addition to the existence of mobile banking facilities for customers will feel more effective and efficient.

Mobile banking services open the opportunity to customers to perform banking transactions using mobile devices or Personal Data Assistant (PDA), which currently almost everyone has had it. Thus mobile banking becomes the right choice to be marketed by the Bank to its customers. The banking industry provides mobile banking facilities to increase customer satisfaction.

Service quality is key to customer satisfaction measure. If performance fails to meet customer expectations, customers will be dissatisfied. If performance is in line with customer expectations, then the customer will be satisfied. If performance exceeds customer expectations, then customers will be very satisfied and happy [25]

Based on previous research conducted by Lin (2010) the attributes of innovation used include relative advantages, ease of use and suitability of use. But here to refine the research, we add a variable complexity in it. Thus perceive four can represent the attribute of innovation expected by the customer.

Information systems research (IS) has proposed that mobile banking can be considered one of the most significant technological innovations, emerging as a major platform for expanding access to banking transactions through mobile devices, and operating wireless communication technologies. ([9]; Kleijnen, Wetzels, & Ruyter, 2004; [13, 14])

When new innovative services such as mobile banking are introduced, customers may be afraid to use them to transact [26]. The emphasis that the main concerns regarding the adoption and use of mobile banking is the concerns of the lack of transaction security, including the lack of SMS encryption (short message service) messages and the fear of customers to distribute personal data. To mitigate these fears there is a need to trust and facilitate business transactions under uncertainty [4]. Kim et al. (2009b) argue that the role of attitudes becomes important in determining the purpose of adoption of new technologies. They added that exclusion would undermine the prediction of intent. So the main question remaining is not whether to include or exclude attitudes, but how to conceptualize them (unidimensional vs. multidimensional).

In the context of mobile banking, customers can establish a knowledge-based belief about whether mobile banking companies (including banks and other financial institutions) have the ability to provide both convenient and convenient banking services (ie competencies), and whether mobile banking companies are willing to provide good services that is, to have virtue) and make a deal in good faith (ie, have integrity) regarding banking transactions. Customer trust may play an important role in explaining and troubleshooting the application of mobile banking. This perspective has been reinforced by recent studies [8, 16].

The study emphasizes two things for the first mobile banking is the attribute of innovation that customers need to adopt mobile banking and the two trust factors desired by customers from mobile banking providers to be able to adopt service services. And how these two things affect the attitude of the customer and the value of nasbah to adopt moile banking. So that research can be a reference for mobile banking provider to develop service of service in accordance with attribute of innovation or trust factor required by customer so that customer will adopt mobile banking, and service usage level keep increasing.

2. Review of the Literature

2.1. Mobile banking

Mobile banking can be defined as a mobile commerce application that enables customers connect to bank in virtually any time and any place. It is also defined as providing related banking and financial services such as savings, funds transfers, and stock market transactions among others on mobile devices [21]. Lee, et all (2009) Mobile banking is an extension of banking and financial services to networks and

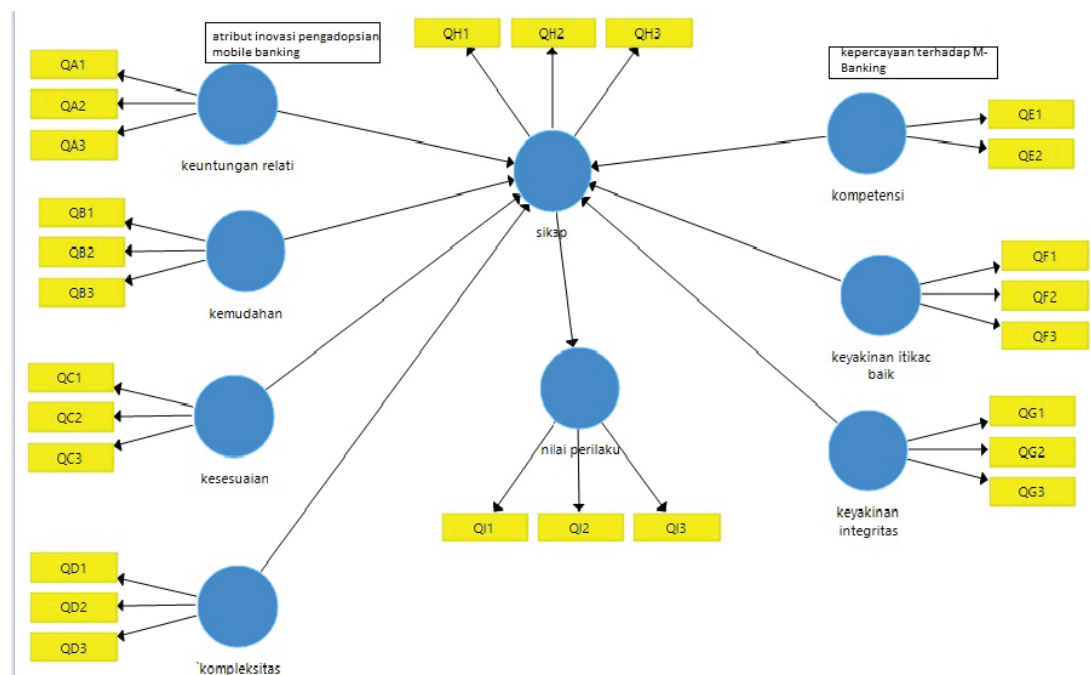


Figure 1: Research Model.

mobile devices. Characteristics such as time and location of independence and secure transactions through the use of personal phones to identify account owners and to confirm transactions lead to rapid mobile banking growth.

It can be concluded that Mobile banking or better known as a banking facility or service using cell phone communication tool, with the provision of facilities for banking transactions through applications that are inside. With mobile phones and mobile banking services, banking transactions are usually done manually, can be done without having to visit and queue at the bank, only by using mobile phone customers can save time and cost. Mobile banking services provide convenience for customers to perform banking transactions such as balance checks, inter-account transfers, bill payments, credit content, and more.

2.2. Innovation attribute

This study focuses on the perceived attributes of innovation and knowledge-based trust as explanatory variables and predictive of behavior and attitude of the early adoption of mobile banking lawyer. All the variables hypothesized in this study are the relationship between the expected nature of customer behavior against mobile banking adoption .

Mobile banking may have new features (as can be done anywhere, flexibility and mobility) compared to conventional banking channels (eg, automated teller machines, telephone banking, non-mobile internet banking), but the effects of the attribute of innovation deserve attention. fully understood in the adoption of mobile banking [28].

Moore and Benbasat (1991) download mengadops i yatakan that the relative advantage of new technologies that will dharapkan make the customer want to try the new technology. so the perceived relative advantage of an innovation is positively related to the rate of adoption. So mobile banking as a service service that is newly expected can give real benefits such as real time , convenient and affordable for customers . The desire to adopt Mobile Banking can be influenced by the relative advantage that will or has been obtained by the customer, hence the hypothesis can be drawn :

H1 : The perceived relative advantage has a positive effect on attitudes towards adoption (or continue to use) mobile banking

Malhotra and Galleta (2005) state Perceived ease of use is defined as the extent to which a person believes that using a technology will be free from effort. So if someone believes that the information system is easy to use then he will use it and likewise sebaliknya a. Chaonali, Walid (2016) states that the technology acceptance model assumes that 'perception of all hope' and 'ease of use' produces a good attitude and a high intention to use new technologies. Thus the second Hypothesis that can be drawn is:

H2: Perceived ease of use has a positive effect on attitudes towards adoption (or continue to use) mobile banking.

Good compatibility occurs when there is a balance between individual needs and better technological innovation, because it allows innovation to be interpreted in a better context [23]. So it is possible there is a positive worker between the compatibility due to the balance of individual needs and technological innovation with the interest of using mobile banking, and can be drawn hypothesis as follows:

H3 : Perceived conformance has a positive effect on attitudes towards adoption (or continue to use) mobile banking.

Aker and Mbiti (2011) express the complexity, in the use of Mobile Banking becomes a customer obstacle for the customer. Although initially there is an explanation in advance but this is an obstacle in the desire to use Mobile Banking. So there is a correlation between the complexity with the use of mobile banking:

H4. The low level of complexity has a positive effect on attitudes towards adoption (or continue to use) mobile banking

2.3. Trust in mobile banking

As a fairly new banking application, some may choose not to use mobile banking due to security or privacy issues. His lack of trust is the reason most often complained of by customers [11, 16].

The most important future Challenge in online banking transactions is how to give confidence to customers, because the transaction does not have a physical presence and physical place, or face-to-face interaction between bank and customer personnel. To overcome the uncertainty in the amobile transaction environment, trust helps reduce fraud and potential risks and increases the likelihood of customers implementing mobile banking [1]. Previous studies have shown that higher levels of trust are required in the online transaction environment than in face-to-face transactions [7, 18].

Pennington, Wilcox, and Grover (2003) suggest that customers understand the technical competence of a website in terms of their understanding of the fundamental processes governing online transactions. If customers believe that mobile banking companies offer the capability, expertise, and expertise to provide appropriate transactional services, then they will tend to be easier to assess mobile banking. Thus, perceived competence is proposed to generate a more positive attitude towards adoption (or continue to use) mobile banking, leading to the following hypothesis

H5. The perceived competence has a positive effect on the attitude of adopting (or continuing to use) mobile banking

The virtues or good deeds of the company are important to believe because they show how far a person is perceived to be concerned with interpersonal concern and care for others, and is willing to do well for reasons other than ego and profit [27]. If customers believe that mobile banking companies have good faith, they tend to use mobile banking. Thus, perceived security is likely to be associated with a positive attitude towards adoption (or continue to use) mobile banking. This results in the following hypothesis.

H6. The belief in virtue (good faith) is perceived to have a positive effect on attitudes towards the adoption (or continue to use) of mobile banking.

Integrity becomes very important because it can reduce uncertainty and potential risks [3]. In the context of mobile banking, rules governing integrity include providing accurate and timely information, maintaining customer commitment, and maintaining the confidentiality of personal information. Such integrity rules convey the picture of objectivity and encourage customers to view mobile banking companies as having high integrity. Mobile banking companies are considered to show high integrity when customers believe that mobile banking companies show fairness, honesty, and strong objectivity. Therefore, customers with high integrity confidence in mobile banking companies tend to have a positive attitude towards it adopt (or continue to use) mobile banking. This leads to the following hypothesis.

H7: The perceived confidence in integrity has a positive effect on attitudes towards adoption (or continue to use) mobile banking.

2.4. Attitude and behavioral intention

The individual's attitude towards the use of the system is expected to affect the intentions of system usage [15]. The existence of this relationship has been supported in various situations, including in the workplace using enterprise resource planning (ERP) and knowledge management programs ([5]; Wu & Li, 2007) This study analyzes how this relationship can be applied in the context of mobile banking. Attitudes towards mobile banking customers reflect their feelings and not terhadap profitable mobile banking

H8: Customer attitude has a positive effect on bad intentions about adopting (continuing) mobile banking.

3. Research Method

3.1. Data collection

For research conducted in Indonesia, precisely in the city of Surabaya. Using primary data by spreading paper-based questionnaires with a total of 93 correspondents , and only 80 questionnaires can be used. This questionnaire is shown to customers of banks that have not used mobile banking services since this study focuses on the attribute of innovation required by customers to adopt mobile banking and the two trust factors desired by customers from mobile banking providers in order to adopt the service.

Kuisioner which were distributed to the students and customers of the two state-owned banks in Indonesia. Spread Questionnaire conducted for 2 weeks, starting from November 6, 2017 until November 17, 2017. Jenis and Source Data This research type is quantitative research by testing the hypothesis.

TABLE 1: Profile of correspondents.

Gender	Man	47
	Woman	33
type of work	Students	28
	PNS / BUMN	29
	Private	20
	Others	3
Age	<25 years	28
	25 - 35 years old	18
	35-45 years old	32
	> 45 years old	2
Salary	<2,500,000	28
	2,500,000 - 5,000,000	9
	5,000,000 - 10,000,000	32
	> 10,000,000	11

3.2. Measurements

The questionnaire was developed only for potential mobile banking customers. All research variables were measured by using multiple item scales and adjusted from previous studies with minority changes to fit the mobile banking context.

Scale for the three attributes of innovation attributes (perceived relative advantage, ease of use and compatibility) were measured using items adapted from Lin (2010), namely the perceived relative advantage with three items question, perceived ease of users with three items, and perceived compatibility with three items. Items to assess perceived competence, virtue and integrity beliefs are also based on Lin (2010), containing three items for each construct. All items are encoded using a Likert scale using seven points ranging from strongly disagree (1) to strongly agree (7). At the end of the study will dil ampiran right item questionnaire that is used in this study.

4. Data Analysis and Results

The model was tested using structural equation modeling (SEM) using SMARTPLS application (version 3. o) was chosen primarily because of its emphasis on the variance-covariance matrix of the whole and the overall fit models.

4.1. Analysis of the measurement model

According Hussein (2015) The first thing to do is to analyze the Outer model, in this case of all variables have composite Reliability > 0.7 so it has a high reliability. The expected AVE also has a value of > 0.5, and the third value of Cronbach alpha inherited is > 0.6 for all constructs. Moderate Discriminant Validity is a value of cross loading factor which is useful to know whether the construct has an adequate discriminant that is by comparing the value of loading on the targeted construct must be greater than the loading value with the other constructs.

Discriminant Validity

	'kompleksitas	kemudahan_	kesesuaian	keuntungan re...	keyakinan inte...	keyakinan itika...	kompetensi	nilai perilaku	sikap
'kompleksitas	0.979								
kemudahan_	-0.023	0.974							
kesesuaian	-0.008	0.031	0.806						
keuntungan re...	0.124	-0.105	0.103	0.945					
keyakinan inte...	0.114	-0.096	-0.019	-0.055	0.879				
keyakinan itika...	0.047	-0.117	-0.071	0.297	0.060	0.983			
kompetensi	-0.071	0.203	0.100	-0.162	-0.059	-0.078	0.958		
nilai perilaku	-0.097	-0.147	0.147	0.107	0.272	0.105	-0.229	0.900	
sikap	0.089	-0.030	0.160	-0.235	0.493	0.131	0.011	0.129	0.920

Figure 2: Discriminant Validity.

4.2. Inner model testing

This evaluation can be done in 3 ways the first is lihat R^2 , Q^2 , GoF

$$\begin{aligned}
 Q^2 &= 1 - (1 - R)(1 - R^2) \\
 &= 1 - (1 - 0.017)(1 - 0.000289) \\
 &= 0.0172
 \end{aligned}$$

$$\begin{aligned}
 \text{Gof} &= \sqrt{\text{AVE} \times R^2} \\
 &= \sqrt{0.483}
 \end{aligned}$$

Construct Reliability and Validity

Matrix	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
kompleksitas	0.979	1.068	0.986	0.959
kemudahan_	0.980	3.106	0.982	0.949
kesesuaian	0.743	0.814	0.846	0.649
keuntungan relatif	0.940	0.963	0.961	0.893
keyakinan integritas	0.881	1.180	0.911	0.773
keyakinan itikad baik	0.983	1.090	0.988	0.965
kompetensi	0.954	102.979	0.957	0.918
nilai perilaku	0.914	0.682	0.928	0.811
sikap	0.909	0.911	0.943	0.846

Figure 3: Construct Reliability and Validity.

So the model formed is robust, so hypothesis testing can be done.

R Square

Matrix	R Square	R Square Adjusted
	R Square	R Square Adjusted
nilai perilaku	0.017	0.004
sikap	0.365	0.303

Figure 4: R Square.

Hypothesis testing can be seen from t-statistics and probability values. For hypothesis testing the alpha used is 5% and the value of t-statistik used is 1.96. So the acceptance / rejection criteria are H_a accepted > 1.96 . Thus from these results can be drawn that the relative profit value of 3.187 and integrity confidence of 6.724. Only these two have significant influence on customers' attitudes regarding the adoption of Mobile Banking.

5. Research Results and Limitations

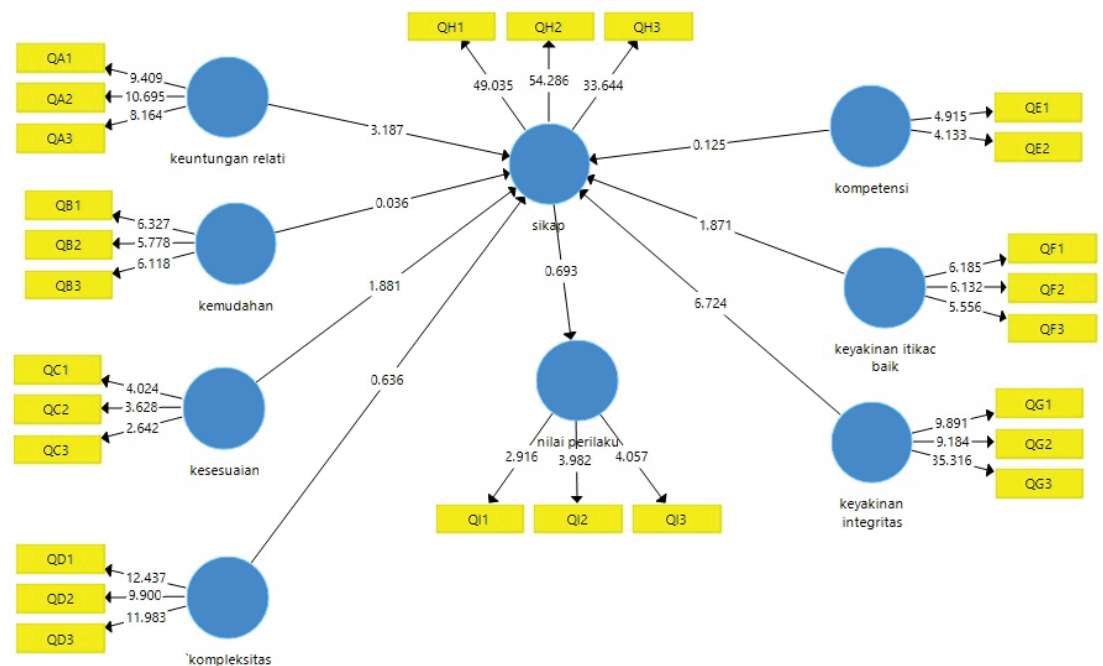


Figure 5: Hasil Pengujian Empiris.

5.1. Research results

This study has contributed to the provision of mobile banking service services related to information required by customers to use the service. With the various advances in technology that exists today, of course the desired customer wants not just transactionkemudahan, compatibility and compatibility. Because some telecom companies and online sales agencies offer similar functionality to mobile banking. Proven in this research the thing most desired by the customer is a relative profitability that can be offered by the banking and also the integrity belief of the bank itself against customer. Thus the bank can continue to innovate to provide the best service desired by customers, by developing the field of information technology.

5.2. Limitations

Limitations experienced are the short time in the collection of primary data conducted in two weeks, and the research is only done on two state-owned banks only. Further research can be done over a longer period of time and with larger research areas. Addition of variables can also be done in order to refine the research.

1. Relative gains perceived:

- (a) Adopting mobile banking will enable me to perform banking transactions more efficiently.
 - (b) Adopting mobile banking will complete banking transactions more quickly.
 - (c) Adopting mobile banking is an easy way to perform banking transactions.
2. Ease of use:
- (a) Learning to operate mobile banking is very easy for me.
 - (b) Adopting mobile banking makes me easy to complete banking transactions.
 - (c) Interaction with mobile banking does not require much effort.
3. Perceived compatibility
- (a) Mobile banking is compatible with my lifestyle.
 - (b) Adopting mobile banking fits the way I manage my finances.
 - (c) Adopt mobile banking to perform banking transactions in accordance with my work style.
4. Complexity
- (a) The use of Mobile banking will not make it difficult for me to use it.
 - (b) I believe the features in Mobile Banking will be very user friendly.
 - (c) In using Mobile banking will not be troublesome for me.
5. Perception of competence:
- (a) I think mobile banking has the ability to understand my needs about managing my finances.
 - (b) I think mobile banking has a future to understand my needs in managing my finances.
 - (c) I think mobile banking companies give good knowledge in managing my finances.
6. Perceived goodness:
- (a) I think mobile banking company interest me.
 - (b) If I need help, I believe mobile banking can help me do my best.
 - (c) I think mobile banking helps the welfare of my life.
7. Perceived integrity:

- (a) I think mobile banking can keep my information confidential.
- (b) I think mobile banking can keep transaction commitments with customers.
- (c) I think mobile banking can provide unbiased information about banking transactions.

8. Attitude:

Adopt this mobile banking

- (a) Bad.. good.
- (b) negative.. positive.
- (c) do not like.. like

9. Behavioral intentions:

- (a) I am very inclined not to adopt mobile banking in the future.
- (b) I plan to adopt mobile banking in the future.
- (c) I believe adopting mobile banking is beneficial to me

References

- [1] Aladwani, A. M. (2001). Online banking: A field study of drivers, development challenges, and expectations. *International Journal of Information Management*, 21(4), 213–225.
- [2] Aker, J., & Mbiti, I., (2010). "Mobile Phones and Economic Development in Africa", *Journal of Economic Perspectives*, 24(3), pp.207–232.
- [3] Bhattacharjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems*, 19(1), 211–241.
- [4] Corritore, C. L., Kracher, B., & Wiedenbeck, S. (2003). On-line trust: Concepts, evolving themes, a model. *International Journal of Human-Computer Studies*, 58(6), 737–758.
- [5] Calisir, F., Gumussoy, C. A., & Bayram, A. (2009). Predicting the behavioral intention to use ERP systems: An extension of the technology acceptance model. *Management Research News*, 32(7), 597–613.
- [6] Chaonali, Walid, Nizar Souiden, Riadh Ladhari (2016). Explaining adoption of mobile banking with the theory of trying, general self-confidence, and cynicism. *Journal of Retailing and Consumer Services* 35 (2017) 57–67

- [7] Grabner-Krauter, S., & Kaluscha, A. (2003). Empirical research in on-line trust: A review and critical assessment. *International Journal of Human-Computer Studies*, 58(6), 783-812.
- [8] Gu, J. C., Lee, S. C., & Suh, Y. H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, 36(7), 11605-11616.
- [9] Herzberg, A. (2003). Payments and banking with mobile personal devices. *Communications of the ACM*, 46(5), 53-58.
- [10] Hussein, Ananda Sabil.(2015). Penelitian Bisnis dan Manajemen Menggunakan Partial Least Squares (PLS) dengan SmartPLS 3.o. Universitas Brawijaya
- [11] Kim, G., Shin, B., & Lee, H. G. (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal*, 19(3), 283-311.
- [12] Kim, Y.J, Chun, J.K, Song, Jaeki (2009). Investigating the role of attitude in technology acceptance from an attitude strength perspective. *International Journal of Information Management* 29 (2009) 67-77
- [13] Laukkanen, T. (2007b). Measuring mobile banking customers' channel attribute preferences in service consumption. *International Journal of Mobile Communications*, 5(2), 123-138.
- [14] Laukkanen, T., & Lauronen, J. (2005). Consumer value creation in mobile banking services. *International Journal of Mobile Communications*, 3(4), 325-338.
- [15] Lee, I., Choi, B., Kim, J., & Hon, S. J. (2007). Culture-technology fit: Effects of cultural characteristics on the post-adoption beliefs of mobile Internet users. *International Journal of Electronic Commerce*, 11(4), 11-51.
- [16] Lee, K. C., & Chung, N. (2009). Understanding factors affecting trust in and satisfaction with mobile banking in Korea: A modified DeLone and McLean's model perspective. *Interacting with Computers*, 21(5), 85-392.
- [17] Lee, M. (2009), "Factors influencing the adoption of internet banking: an integration of TAM and TPB with perceived risk and perceived benefit", *E-Commerce Research and Application*, Vol. 8 No. 3, pp. 130-141.
- [18] Lee, M. K. O., & Turban, E. (2001). A trust model for consumer Internet shopping. *International Journal of Electronic Commerce*, 6(1), 75-91
- [19] Lin, Hsiu-Fen (2010). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International Journal of Information Management* 31 (2011) 252-260

- [20] Malhotra, Y. & Galletta, D. (2005). A multidimensional commitment model of volitional system adoption and usage behaviour. *Journal of Management Information Systems*, 22, 117-151.
- [21] Tiwari, R., Buse, S., 2007. *The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector*. Hamburg University Press, Hamburg, Germany.
- [22] Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information System Research*, 3(2), 192-222.
- [23] Ilie, V., van Slyke, C., Green, G., & Lou, H. (2005). Gender differences in perceptions and use communication technologies: A diffusion of innovation approach. *Information Resources Management Journal*, 18(3), 13-31.
- [24] Pennington, R., Wilcox, H. D., & Grover, V. (2003). The role of system trust in business-to-consumer transactions. *Journal of Management Information Systems*, 23(3), 197-226.
- [25] Kotler, P. and Keller, L.K (2009) *Manajemen Pemasaran*. Terjemahan. Jakarta: Penerbit Erlangga
- [26] Luarn, P., & Lin, H. H. (2005). Towards an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(6), 873-891.
- [27] Robert, L. P., Jr., Dennis, A. R., & Hung, Y. C. (2009). Individual swift trust and knowledge-based trust in face-to-face and virtual team members. *Journal of Management Information Systems*, 26(2), 241-279.
- [28] Sulaiman, A., Jaafar, N. I., & Mohezar, S. (2007). An overview of mobile banking adoption among the urban community. *International Journal of Mobile Communications*, 5(2), 157-168.