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Adoption Behavior of E-Money Usage

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Abstract: Utilization of e-money as efficient and convenience payment method in Indonesia has been introduced since 2007. The growth of e-money card usage increased up to 53% in 2012, but the individual adoption is still low compared to total population of Indonesia. The objective of this study is to examine factors affecting customer adoption behavior of e-money and to examine the difference in intention to use/reuse e-money between adopter and non-adopter. The in-depth interview showed that risk and security were not the main consideration for using e-money; this result contradicts with the result of similar previous research in e-payment. Meaning, that in Indonesia consumers were not afraid of losing money while using e-money for transaction. The questionnaire based on the modification of Technology Adoption Model and in-depth interview results. Sample of 143 respondents were taken to test the hypotheses, and analyzed using multivariate analysis methods. The results of the study-enhanced understanding of adoption behavior of e-money by describing perceived benefit as factor that influence intention to use/reuse e-money in Indonesia. This study also contributed in managerial practice that there are differences intention to use/reuse e-money between adopters and non-adopters due to lack of information of the products.

Keywords: *e-money, adoption behavior, attitude, TAM, acceptance model*

1. Introduction

The use of electronic money (e-money) for purchased payment methods in several merchants in Indonesia reach about 21,869,946 units in 2012. The benefit of using electronic money, as micro payment instruments, are to reduce small money printing fees, security and lost risk, and to provide convenience in transaction for customer (Bank of Indonesia, 2006). Based on the type of media storage, e-money can be classified into card-based products/prepaid card and software based product (Bank of Indonesia, 2006; European Central Bank, 2000). The first category stored-value of money as digital money at chip on smart card, whereas the second category stored-value of money as digital cash at server or software/applications. The first category as prepaid card was the type of e-money that issued in Indonesia by six banking institutions (Bank of Central Asia (BCA), Bank Negara Indonesia (BNI), Bank Mandiri, Bank Rakyat Indonesia (BRI), and Bank Mega, and Bank DKI of Jakarta), and can be use at several Trans Jakarta busway station, retail stores, food & beverages stores, parking tickets, highways, and others. Electronic money can be used on online and offline transaction.
Previous researches were conducted to identify characteristic of electronic money, such as: medium of switchover, nominal amount of money, security, interoperability and portable (Heikkila, 2000); anonymous, two-way, offline capable, and divisible (Okamoto, 1991). E-money cards also seen as one of dynamically continuous innovations because not dramatically change into individual or as evolution non-revolutionary behaviour. From those characteristic, the electronic money was kind of technology that can categorize as an online and offline payment methods, which is unique characteristic of technology.

Although almost 6 (six) years of implementation in transaction in Indonesia, the number of e-money instruments on 2012, is only 21,869,946, about 9% of Indonesia population (237.440.363 people based on BPS, 2010). The fundamental problem of this study is the low diffusion rate of e-money. Therefore, there are questions of what factor-affecting acceptance of e-money as payment methods in Indonesia, and purpose of this study is to examine factors affecting customer adoption behaviour of e-money in Indonesia and to examine the difference in intention to use/reuse e-money between adopter and non-adopter. Acceptance of new technology can be predicted using consumer attitudes and behaviour toward new technology. The Technology Acceptance Model (TAM) appears to be model for measure attitudes and behaviour of customer toward new technology that widely used and accepted (Burton-Jones and Geoffrey, 2006; King and He, 2006;

Schepers and Wetzels, 2007). The study was conducted in two steps: (1) Develop adoption behaviour model of e-money based on modification of TAM model and qualitative research; (2) Test empirically the explanatory model of adoption behaviour of e-money. The results of the study increase understanding of adoption behaviour of e-money and also contributed to managerial practiced for enhancing e-money diffusion.

2. Literature Review

Technology Acceptance Model (TAM): Acceptance of technology can be predicted by attitude and behavior usage of customer (Davis *et al*, 1986). In Technology Acceptance Model (TAM) the concepts measures the perceived ease of use and perceived usefulness as an individual belief toward using new technology. The individual belief turns to their attitude toward use and leads to intention to use the new technology (Davis *et al*, 1986). Perceived usefulness is defined as the extent to which a person believes that using a system will increase his or her job performance. Perceived ease of use refers to the degree to which a person believes that using the system will be free of effort (Davis *et al*, 1986).

Hypotheses Development: The study was conducted in two stages; qualitative and quantitative method. Qualitative method was conducted by doing literature review and in-depth interview to identify factors affecting consumer in adopting e-money card in their daily activities. Several variables were developed from online payment and e-payment literature with some modification based on in-depth interview result. As shown in Table 1, the construct of the framework are Intention to use, Perceived Benefits, Perceived Risk and Secure, and Bank Consideration, expect to affect intention to use/reuse e-money card.

Perceived Benefits: Due to the unique characteristic of e-money card that was explained in literature above, the model to measured adoption of e-money card could explained by Technology Acceptance Model (Davis *et al*, 1986) and several literature of e-payment. Based on Technology Acceptance Model (TAM), the intention to use new technology can be predicted by perceived use and perceived ease of use for those technology. Previous research about adoption of various e-commerce activities also have used TAM to predict the adoption, more useful and/or easier to use, the customer should be more willing to adopt (He & Peter, 2007; Ozkan, *et al*, 2009) and to measure acceptance of new technology (Burton-Jones and Geoffrey, 2006; King and He, 2006; Schepers and Wetzels, 2007). Previous research also has been determined easiness, velocity, and efficiency as motivation of user to use e-money (Bank of Indonesia, 2006). Characteristic of e-money supported that interoperability, portable, reliability, flexibility, convertibility, efficiency, ease of integration with applications, and ease of use are what customer perceived when they using e-money as payment methods (Heikkila, 2000; Okamoto, 1991). In-depth interview result also identified that customer used e-money as payment methods because of the benefits of e-money that saving their time, ease of use, efficient, and secure than cash payment. Therefore the hypotheses are:
Hypotheses 1 (H1): Perceived benefits of using e-money as payment methods positively affect intention to us/reuse e-money card as payment method.

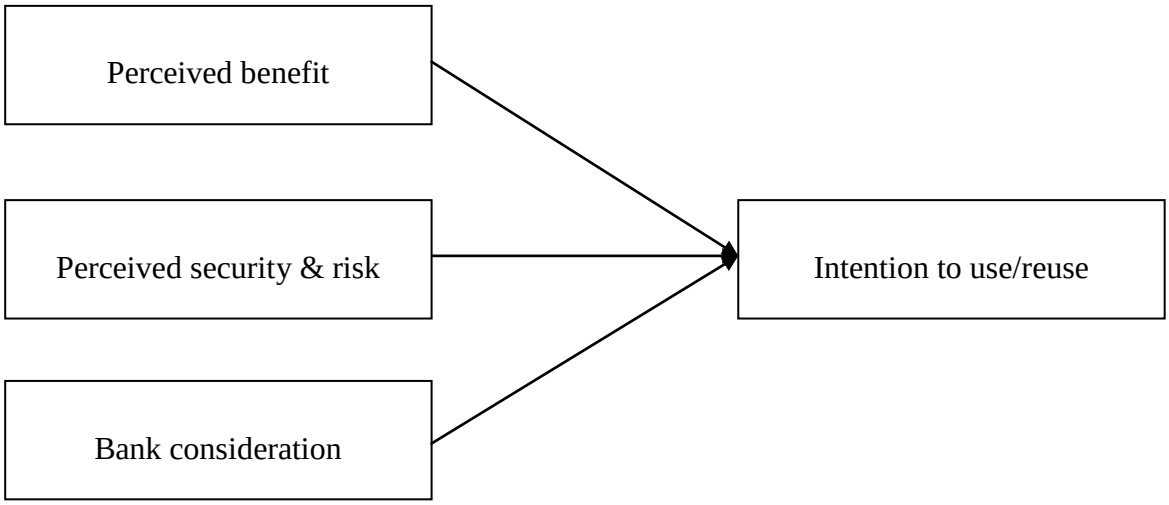
Perceived Secure & Risk: Jebran and Dipanker (2012) identified that security, privacy and risk as safety issued that can affect customer perception of general banking activities of commercial bank, whereas perceived ease of use, security and privacy also as endogenous variable at e-banking activities. Results of in-depth interview also consider security and risk as one of the reason why they used e-money. This variable is examined as one factor that affect customer attitude toward e-money usage in this research**.** Therefore the hypotheses are:
Hypotheses 2
$H2_a$: Perceived risk and secure of using e-money as payment methods negatively affect intention to use/reuse e-money card as payment method.
$H2_b$: There are differences in perceived risk and secure of using e-money as payment methods between adopter and non-adopter.

Bank Consideration: In-depth interview result identified that customer considering name of bank who issued e-money card products. There are six bank institutions who issued several e-money cards in Indonesia, which are Bank of Central Asia (BCA), Bank Negara Indonesia (BNI), Bank Mandiri, Bank Rakyat

Indonesia (BRI), and Bank Mega, and Bank DKI of Jakarta. Four of them are government banking and two of them are private banking. Therefore the hypotheses are:
Hypotheses 3 (H3): Bank consideration who issued e-money card positively affects intention to use/reuse e-money card as payment method.

Additional hypotheses are also proposed to examine intention to use/reuse e-money card between adopter and non-adopter. Therefore the hypotheses are:
Hypotheses 4 (H4): There are differences in intention to use/reuse e-money as payment methods between adopter and non-adopter.

Figure 1: Research model of e-money adoption



As shown in figure 1, the independent variables of the model are Perceived benefits, Perceived risk and secure, and Bank consideration, expect to affect intention to use/reuse e-money card.

3. Methodology

Measurement: There were several steps in this study. First was conducting literature review of previous research and in-depth interview to identify factors that affect the adoption of e-money card and adjusted to the Indonesian customer based on doing in-depth interview to 10 respondents who lived in Jakarta and Bandung urban area and have been used e-money cards in their daily activities for almost one year. Second was questionnaire measuring Likert -type scales ranging between 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree) and 5 (strongly agree) and consist of 31 item question. The construct variables are generated from several previous research and from in-depth interview results; Perceived benefit, Perceived security & risk, and Bank consideration (see Table 1). The indicator of construct which seen in 31 item questionnaire (see Table 4) were developed from in-depth interview result to adjust with Indonesian conditions. We asked the respondents, "Why do you used e-money card?" and "What factor that affect you to use e-money card?" to explore the reason of using e-money card. Based on those questions we grouped it into constructs that has been developed by previous research and add some construct variables that are found in the in-depth interview (see Table 4).

Table 1: Constructs and their sources

Constructs	Sources
Intention to use	Davis *et al*, 1986
Perceived Benefit	Davis *et al*, 1986; Bank of Indonesia, 2006; Heikkila, 2000; Okamoto, 1991; in-depth interview result
Perceived security & risk	Jebran and Dipanker (2012), in-depth interview result
Bank consideration	In-depth interview result

Due to the low adoption of e-money usage in Indonesia, the respondent is divided into adopter and non-adopter of e-money card, whereas all of variable answered by adopter of e-money card identify the relationships between Perceived benefit, Perceived security & risk, and Bank with Indonesian consumer intention to use/reuse of e-money card. The non-adopter respondent answered perception of risk and secure and intention to use e-money card, to be compared with the adopter.

Data Collection: The questionnaires were distributed via online and offline. The offline questionnaires were distributed by personal approach and the online questionnaires distributed by social media, mailing list, and personal email. The survey was established in Indonesia and covers two big cities, which are Jakarta and Bandung, and cover 10 (ten) e-money products that issued by several Indonesian Banking around 2007- Jan 2013. From 145 questionnaires, only 143 valid (98.6%), 52.4% from them are adopter of e-money (75 respondents) and is analyzed further to test the model. Multiple regressions also conduct as methods to analyze the relationship between the perceived benefit, perceived security & risk, bank consideration with intention to use/reuse, whereas independent-sample t-test analysis is done to compare the perceived secure & risk, and intention to use/reuse between adopter and non-adopter.

Reliability and Validity Analysis: The content of survey instrument evaluated by conduct reliability analysis using Cronbach's alpha the most widely use for measured content validity for each scale (Hair *et al*, 2010). All scales are ranging from 0.658 to 0.986 indicating that all scales are reliable although there is some value below 0.70 (threshold value of cornbarch's alpha is 0.70) but 0.60 is considered acceptable in exploratory research (Hair *et al*, 2010).

Table 2: Reliability analysis of developed scales

Construct	Cronbach's Alpha
Perceived benefits	0.986
Perceived risk & secure	0.658
Bank consideration	a
Intention to use	0.914

(a) Bank reputation was single item with no reliability need to calculated

To verify the grouping of the indicator variables and examine validity of the construct, Factor analysis was done by applied principal component extraction method with varimax rotation, eigen values over 1 and extracted by factor loading greater than 0.45 for a sample size of 150 respondents (Hair *et al*, 2010).

Table 3: Validity analysis of developed scales

Construct	Kaisers-Meyer-Olkin (KMO)	Bartlett's test of sphericity			Created Factor	% of extracted variance
		Approx. chi-square	df	Sig		
Perceived benefit	0.951	2902.527	55	0.000	1	88.493
Perceived secure & risk	0.500	38.888	1	0.000	1	74.586
Intention to use/reuse	0.783	490.455	6	0.000	1	80.023

The adequacy of factor analysis measured by the Kaisers-Meyer-Olkin (KMO) and Bartlett's test of sphericity, where value of KMO below 0.50 are not acceptable (Hair *et al*, 2010). The result of factor analysis (see Table 3) showed that each item indicator of Perceived Benefits, Perceived Risk & Secure, and Intention to use/reuse didn't have Kaisers-Meyer-Olkin (KMO) value under 0.50 and conclude that the developed scale were adequate. The factor loading of each item indicator of constructs have significant factor loading with all item loading greater than 0.45 (see Table 4) and conclude that the developed scale were suitable.

Table 4: Factor loading of developed scales

Construct	Item Indicator	Factor Loading
Perceived Benefits	Transaction using e-money make activities easier	0.967
	Transaction using e-money saving time	0.967
	Transaction using e-money give discount and promotion	0.909
	Transaction using e-money more secure than cash	0.956
	Transaction using e-money more efficient than cash	0.937
	Transaction using e-money more efficient than debit card	0.955
	Transaction using e-money more efficient than credit card	0.927
	Easy to find e-money product	0.905
	e-money can use at any merchant/store	0.949
	Transaction using e-money is easy	0.951
	Easy to find e-money top up place	0.922
Perceived Risk & Secure	I'm afraid of failure transaction when using e-money	0.864
	It is not save using e-money if there are no authentification and identity in e-money card	0.864
Intention to use	I want to buy e-money card immediately	0.935
	I'm interested using e-money card immediately	0.930
	I want to get information about e-money immediately	0.900
	I'm interested using e-money card	0.806

4. Results and Discussion

Personal Characteristic of Respondent: Personal characteristic of respondent is identified by gender, location, age, occupation, expenditures and e-money card usage. Table 5 summarizes total of 143 respondents, which consist of 54 males (37.8%) and 89 female (62.2%), the majority respondent are e-money usage (52, 4%). Most of respondent located 58.7% at Jabodetabek area, capital city of Indonesia. The occupation of majority respondents was employee (41.3%) with expenditures around five million rupiah (25, 9%).

Table 5: Demographic characteristic of respondent's

Characteristic	Frequencies	Percentage
Gender		
Male	54	37.8 %
Female	89	62.2%
Location		
Jabodetabek	84	58.7%
Bandung	59	41.3%
Age (years)		
<18	7	4.9%
19-23	9	6.3%
24-35	112	78.3%
36-50	12	8.4%
>50	3	2.1%
Job		
Student	3	2.1%
University student	32	22.4%
PNS	14	9.8%
Employee	59	41.3%
Entrepreneur	11	7.7%
Housewife	11	7.7%
Others	13	9.1%
Expenditures (Rp million)		
< 1	11	7.7%
1-2	25	17.5%

2.1 – 3.5	37	25.9%
3.5 – 5	33	23.1%
>5	37	25.9%
e-money adopter		
Yes	75	52.4%
No	68	47.6%

Characteristic of E-money Products Usage: Identification of e-money usage profile analysis is done to 52.4% respondents who have e-money. The profile characteristic of e-money usage is identified by source of e-money card, types of e-money card, function of e-money card, and top up place (see Table 6). The data revealed that majority of respondents get e-money products from Bank (37.3%) either for free or not, and followed by bundling promotion about 32.0%. From type of products usage, only e-toll Mandiri card (34.5%) and BCA Flazz card (23.3%) reach above 20% of respondent usesr, both of them were issued between with 2007 to 2009, and were the initiator of e-money products in Indonesia (see Apendix I).

Table 6: Descriptive statistic of e-money card usage (n=75)

Variable	Frequency	Percentage (%)
Source of e-money card		
Bundling promotion	24	32.0
Bank	28	37.3
Busway shelter/stasion	3	4.0
Merchant	20	26.7
Type of products usage		
BCA Flazz Card	27	23.3
BNI Prepaid Java Jaz	1	0.9
Prepaid card BNI	4	3.4
BNI Railcard	1	0.9
eToll card Mandiri	40	34.5
Indomaret Card	16	13.8
Gaz card	3	2.6
Brizzi card	4	3.4
Mega cash card/Trans Studio card	15	12.9
Bank DKI card	5	4.3
Product functions		
Toll and park payment	40	34.5
Busway ticket, train ticket, and others public transportation ticket	11	9.5
Gasoline and gas purchased	8	6.9
daily needs purchased	25	21.6
Food and beverages purchased	26	22.4
Top up place		
Bank	17	14.7
Internet/Phone banking	5	4.3
Merchant	28	24.1
ATM	38	32.8

E-money card was used by majority respondents for toll and park payment (36.36%), food and beverages purchased (23.64%) and for daily need purchased (22.73%), and most of them were usually top up their e-money card at ATM (43.18%) and merchants (31.82%).

Source of information for adopter and non-adopter: Data revealed that from 68 non-adopter respondents, 33.8 % (23 respondents) didn't receive information about e-money card, compared to the adopter respondent only 12% (8 respondents) who didn't receive the information. There are differences in source of information between adopter and non-adopter, whereas majority adopter (40%) received

information of e-money from merchant, and the majority of non-adopter (43.5%) from advertising/brochure/leaflet. From type of interest products, both adopter and non-adopter choose e-toll Mandiri card and BCA Flazz card as the interest products.

Table 7: Source of information for adopter and non-adopter

Variable	Adopter (n=75)		Non-adopter (n=68)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Received information of the product				
Yes	66	88.0	45	66.2
No	9	12.0	23	33.8
Source of information				
Bank	9	12.0	14	30.4
Merchant	30	40.0	6	13.0
Advertising/brochure/leaflet	9	12.0	20	43.5
Friends	21	28.0	6	13.0
Others	6	8.0	14	30.4
Type of interest products				
BCA Flazz Card	30	24.8	32	30.2
BNI Prepaid Java Jaz	6	5.0	4	3.8
Prepaid card BNI	7	5.8	8	7.5
BNI Railcard	14	11.6	10	9.4
eToll card Mandiri	32	26.4	28	26.4
Indomaret Card	17	14.0	17	16.0
Gaz card	4	3.3	0	0
Brizzi card	3	2.5	2	1.9
Mega cash card/Trans Studio card	5	4.1	3	2.8
Bank DKI card	3	2.5	2	1.9

Hypotheses Testing: In order to test the hypotheses, this study used Beta coefficient (B) to measure the effects between intention to use/reuse e-money card (dependent variable) and other three independent variables (Perceived benefit, perceived secure and risk, and Bank consideration) as predictor. A key assumption of multiple regression were a number of independent variable which have high correlation with dependent variables, but have low correlation between independent variables (multicollinearity) because can be bias (Hair *et al,* 2010). The assumption evaluated using tolerance value and VIF value and Cook distance. The result showed (Table 8) all tolerance value are above 0.10, it's indicated there's no significant multicollinearity between independent variable. All VIF values were above 1.0 indicates there's no multicollinearity between independent variable. From maximum value of Cook's distance 0.109 (problem if >1) showed that there are no major problems. Therefore, the model fits to test the hypotheses.

Table 8: Regression coefficient and multicollinearity test

Variables	Beta	t-value	sig	Tolerance	VIF
Perceived Benefit	0.579	5.930	0.000	0.969	1.032
Perceived risk and security	-0.024	-0.232	0.818	0.889	1.125
Bank consideration	0.075	0.747	0.457	0.915	1.093

Table 8 showed there are positive relationship between perceived benefits and intention to use e-money card. The beta coefficient of perceived benefits was the largest values than other variables (0.579), it's indicated that perceived benefit have strongest unique contribution to model and from significances value 0.000 (p. 0.05) and perceived benefits was the significant predictors of intention to use e-money card. For perceived risk & security and bank consideration, there is no significance influence to the intention to use/reuse e-money cards.

Table 9: Independent sample t-test

Variables		Levene's Test for Equality of Variances (Sig.)	t-test for equality of means		
			t	df	Sig. (2-tailed)
Perceived risk and security	Equal variances assumed	0.955	-0.423	141	0.673
	Equal variances not assumed		-0.424	140.16	0.672
Intention to use/reuse	Equal variances assumed	0.354	2.311	141	0.022
	Equal variances not assumed		2.326	140.834	0.021

In order to test the hypotheses 2b and 4 (four), this study used sig. (2-tailed) to find out whether there is a significant difference between adopter and non-adopter in perceived risk & secure and intention to use/reuse. A key assumption of independent sample t-test are the result of significance value for Levene's test, whereas if significance value for Levene's test is larger than 0.05 we should used Equal variances assumed (Hair *et al*, 2010). Therefore, we used Sig. (2-tailed) value in first line (Equal variances assumed). Hair *et al* (2010) said that for Sig. (2-tailed) value below 0.05 indicates there are differences between groups. Table 9 showed the Sig. (2-tailed) value of perceived risk and security was above 0.05, whereas the Sig. (2-tailed) value of intention to use/reuse was below 0.05. It is conclude that there are no differences in perceived risk and security between adopter and non-adopter, but there are difference in intention to use/reuse e-money card between adopter and non-adopter. Therefore, our findings support some of the hypotheses (see Table 10). Respondent tends to adopt e-money card only if they assume to receive certain benefit from e-money card; such as make activity easier, saving time, give discount or promotion, efficient than cash, credit card and debit card, easy to find and easy to use, and easy to top up.

Table 10: Summary result of hypotheses

Variables	Hypothesis	Test Result
Perceived Benefit	H1	Supported (positive and significant)
Perceived risk and security	H2.a	Not supported (negative and not significant)
Perceived risk and security between adopter and non-adopter	H2.b	Not supported
Bank consideration	H3	Not supported (positive and not significant)
Intention to use/reuse between adopter and non-adopter	H4	Supported

Discussion: This study examines factors affecting customer adoption behavior of e-money and only perceived benefit that affecting customer to adopt e-money card while perceived risk and security does not influence the intention of customer to adopt e-money card. This finding contradicted with previous study that identified of perceived risk and security can affect customer perception in general banking activities, e-banking activities, e-payment and online payment (Jebran & Dipanker, 2012; He, 2007; Ozkan, 2009). The characteristics of electronic money with have online and offline system, explains why customers still adopt electronic money although there are no authentifications and identity in their e-money card. The Bank of Indonesia as financial regulator in Indonesia also have prevent the fraud by limit the amount of money that can be stored in an e-money card. Risk of failure transaction also can be prevented by the offline methods of e-money transaction. The in-depth interview also showed that risk and security were not the main consideration for using e-money. It concludes that in Indonesia consumers were not afraid of losing money while using e-money for transaction. Another factors, which was tested, is bank consideration, this is proved as not significant factor that affect customer adoption of e-money card in Indonesia. Almost all the bank issuer are government banking and only two who are private banking but was the top tier bank in Indonesia. This study also have examine that there were no differences between adopter and non-adopter in perceived risk & security, meanwhile there were differences in intention to use/reuse. The number of respondent who

have received the information of the products explained why there were any difference between those groups. The number of respondent who have not received information about e-money card for non-adopter respondents were larger (33.8%) than adopter respondent (12%). The major factor that affect customer to adopt e-money card as payment methods is perceived benefits, particularly customer will be significantly likely to adopt if they perceived that: (1) e-money make their activities easier; (2) saving time; (3) give discount and promotion; (4) efficient that cash, debit card and credit card; (5) easy to find and to top up; (6) can be use anywhere. Those customers who have adopted e-money card majority use e-money card as a transportation payment and food and beverages payment and majority use e-toll card and BCA flazz card, regarding to both of the products were the initiator of e-money product in Indonesia and the function of e-money as micro payment.

5. Theoretical and Managerial implication

This study provides understanding of adoption e-money in Indonesia, and particularly additional research on type of e-payment that have unique characteristic of dual systems (online and offline system), whereas most research on e-payment only provide online systems payment. Findings on perceived of risk and secure that not affect intention to use e-money card also give understanding that there are different perception of risk and secure that customer perceived in different type of e-payment products. To speed up the diffusion process of e-money products, bank issuer and other financial institution who issued the e-money products should pay attention to give information to the customer about the benefit of e-money products due to 33.8% of non adopter haven't received information about e-money products. Although not specifically addressed in this research, the source of information of products that majority adopter respondent received majority were from merchant suggesting that bank issuer should examine and improve their source information through their merchant, were the information must be emphasize on e-money can make activities easier, efficient, saving time, ease of use, and give discount and promotion.

Limitation and Future research agenda: The limitation of this study is the sample should be more diversified in term of geographical regions to generalized result to cover Indonesia area. Future studies not only have to enlarge the coverage area, but also can explore the antecedent factors and the outcome. In addition, future study can compare intention to adopt e-money between urban area and rural area to considering demographic factor.

References

www.bi.go.id

Burton-Jones, A. & Geoffrey, S. (2006). The mediation of external variables in the technology acceptance model. *Information and Management,* 42, 706-717.

He, F. & Peter, P. M. (2007). Decision Factors for the Adoption of an Online Payment System by Customers. *International Journal of E-Business Research*, 3(4).

Heikkilä, M. & Laukka, L. (2000). Electronic Money, Telecommunications software and multimedia laboratory Helsinki University of Technology 10.1.2000, http://www.tml.tkk.fi/Opinnot/Tik110.501/1999/papers/electronic_money/electronicmoney.html (accessed date 29.04.2013).

Jebran, K. & Dipanker, A. (2012). Consumer's Perception on General Banking Activities of Commercial Banks: A Study in the Banking Context of Bangladesh. *European Journal of Business and Management*, 4(7).

King, W. R. & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Managemement*, 43, 740-755.

Okamoto, T. O. (1991). Electronic digital cash, A*dvances in* cryptology, Crypto'99, J. Fergenbaum (ed.), 324-350.

Ozkan, S., Gayani, B. & Ray, H. (2009). Facilitating the adoption of e-payment systems: theoretical constructs and empirical analysis. *Journal of Enterprise Information Management*, 23(3), 305-325.

Schepers, J. & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: investigating subjective norm and moderation effects. *Information & Management,* 44, 90-103.

Working paper BI. (2006). Grand Desain Upaya Peningkatan Penggunaan Pembayaran Non-Tunai Melalui Pengembangan E-Money. Available from: Working paper Bank Indonesia [01 Maret 2013].

Working paper BI. (2006). Kajian Operasional E-Money. Available from: Working paper Bank Indonesia [01 Maret 2013].
Working paper BI. (2006). Kajian Mengenai E-Money. Available from: Working paper Bank Indonesia [01 Maret 2013].

Appendix I

Profile of e-money products

Issuer	Card	Launch	Merchant
BCA	Flazz card	2007-2008	all 20,000 merchant and busway station, and other merchants with logo's Flazz
BNI	Prepaid Java Jazz Prepaid Java Jazz Prepaid card BNI Rail card	2009 2012	Busway station, Alfamart, Lawson, Mekarsari and other merchants with logo's BNI
Mandiri	E-toll card Indomaret card Gaz card Mandiri e-money	2009 2008 2008 2012	Toll road that manage by PT Jasa Marga (Persero) Tbk, PT Citra Marga Nusaphala Persada Tbk and PT Marga Mandala Sakti Busway station, All gas station at Jabotabek area All merchant with logo's mandiri
BRI	Brizzi	2011	Airport for PSC (passenger service charges) payment, Busway station, and other merchants with logo's Brizzi
Bank Mega	Trans studio card Mega cash card	2011	Trans studio Bandung and Makasar, 1,000 merchants with logo's Mega, and toll road at Makassar
Bank DKI	Bank DKI card	2012	Busway station, and other merchants with logo's Bank DKI