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Antecedents of e-money adoption intention among Indonesian and Turkish consumers

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A B S T R A C T

This study aimed to measure the impact of attitude, social influence, and perceived usefulness on e-money adoption intention. Data were collected using an online instrument involving 264 participants in Indonesia, and 287 participants in Turkey. Data were analyzed using exploratory and confirmatory factor analysis, and structural equation modeling and there were five hypotheses to be tested. The results of the study indicated a significant impact of attitude on adoption indention. Also, a significant influence of perceived usefulness on attitude and adoption intention was also detected. Moreover, a significant effect of social influence on perceived usefulness and adoption intention was observed. However, there were different results when the calculation focused on participants in each country. This study discussed recommendations for practitioners and future studies.

1. Introduction

Electronic money or e-money is defined as "electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument" (European Central Bank, 1998, p. 7). In general, according to European Central Bank (1998), there are two types of e-money including card-based products and software-based products. e-Money in this study refers to a card-based product. In Indonesia, Bank Indonesia (the central bank) commenced promoting e-money in 2015 as an attempt to create a cashless society (Gunawan, 2015). Since then, banks and non-banks issued e-money (Lukman, 2014) in different forms including pre-paid card and e-wallet (Wahyuningsih, 2016). In practice, the use of e-money can be mandatory, for example, for paying bus and train tickets, or voluntary, for example, for shopping. Looking at the definition of e-money above, it can be said that popular mobile money in Kenya (Osah & Kyobe, 2017), for example, is part of e-money. When many researchers focus on consumer behaviour related to mobile money, few researchers pay attention to consumer behaviour related to e-money. From that little study, for example, Miliani et al. (2013) examined consumers' intention to adopt e-money by employing perceived benefit, perceived security and risk, and bank consideration as predictor variables. In this current study, the authors employed attitude towards adoption, social influence, and perceived usefulness to predict e-money adoption intention. Therefore, this study intends to evaluate the impact of attitude, social influence, and perceived usefulness on e-money adoption intention. This paper first gives some theoretical background on attitude and adoption intention; perceived usefulness, attitude, and adoption intention; and social influence, perceived usefulness, and adoption intention. Second, the study sets up the theoretical framework to be tested in terms of the results. Third, we present the research methods and the results from Indonesia and Turkey are discussed and finally, conclusion of the study is given.

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2. Literature review

2.1. Theoretical background

2.1.1. Attitude and adoption intention

Badrinarayanan et al. (2014) measured consumers' purchase intention through online shopping. By involving university students in the USA, they investigated the impact of congruity on trust and attitude, and their impact on purchase intention. They explained that attitude significantly affected purchase intentions and congruity with self-image significantly affected attitude.

Accordingly, the authors hypothesise that:

H_1 – Attitude towards adoption significantly influences on e-money adoption intention.

2.1.2 Perceived usefulness, attitude, and adoption intention

Perceived usefulness is determined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). Perceived usefulness is reported to have an important impact on attitude towards adoption and adoption intention (Ayeh et al., 2013; Belkhamza & Wafa, 2015; Szajna, 1996). Furthermore, to predict the intention to use consumer-generated media for travel planning, Ayeh et al. (2013) employed perceived ease of use, perceived usefulness, perceived trustworthiness, attitude, perceived enjoyment, and perceived similarity. They documented that perceived usefulness had a significant impact on attitude and use intention. In addition, they also mentioned that attitude had a significant impact on use intention. Hsu and Lin (2008) studied intention of bloggers to use blogs. In their study, technology acceptance factors and knowledge sharing factors were linked to attitude towards using blog. Further, attitude toward using blog and social influence factors were linked to blogging intention. Social influence factors included social norms and community identifications. They found that attitude and community identification significantly impacted adoption intention. Involving participants of computer program trainings, Malhotra and Galletta (1999) examined behavioural intention and usage behaviour. In their study, social influence was represented by internalisation and identification processes. These two variables were linked to attitude and behavioural intention. They found that attitude was influenced by perceived usefulness, internalisation, and identification. Further, intention was significantly influenced by perceived usefulness and attitude. In contrast, internationalisation and identification insignificantly influenced intention. in other word, social influence failed to predict behavioural intention. Perceived usefulness, trust, and perceived risk were predictor variables used by Belkhamza and Wafa (2015) to predict intention of e-commerce use among Algerian consumers. One of the results they reached that the perceived usefulness had an important impact on adoption intention. Accordingly, the authors posit that:

H_2 – Perceived usefulness has an important impact on attitude towards adoption.
H_3 – Perceived usefulness has an important impact on e-money adoption intention.

2.1.3 Social influence, perceived usefulness, and adoption intention

Social influence is defined as "the degree to which an individual perceives that other important persons believe he or she should use the technology/system" (Venkatesh et al., 2003, p. 451). Prior studies reported that social influence had a significant impact on perceived usefulness and behavioural intention(Kleijnen et al., 2004; Kulviwat et al., 2009; Sabah, 2016). Kulviwat et al. (2009) studied intention of students at a university in the USA to adopt high-tech innovation products. These scholars linked social influence on attitude towards behaviour and adoption intention. They found that social influence had a significant impact on attitude and adoption intention and attitude had a significant impact on adoption intention. This study was supported by Wang and Lin (2011) who investigated bloggers' intention. They provided that social influence had a crucial impact on adoption intention. A study conducted by Yang et al. (2012) measured adoption intention relating to mobile payment services. They compared between users and non-users and included three predictor variables including social influence, personal traits, and behavioural beliefs. They explained that there was a significant impact on adoption intention both users and non-users in terms of social influence. Kleijnen et al. (2004) employed perceived usefulness, perceived ease of use, attitude, perceived cost, social influence, and perceived systems quality to predict consumer acceptance of wireless financial transactions. Some of the findings said that perceived usefulness had a significant effect on attitude, and attitude and social influence had a significant effect on adoption intention. In Lu et al. (2005)'s study, social influence consisted of subjective norms and image. They predicted intention of mobile phone users in the USA to predict intention to use wireless internet service via mobile technology by employing social influence, innovativeness, perceived ease of use, and perceived usefulness. One of the findings they carried out was that social influence insignificantly influenced adoption intention. Perceived usefulness was one of the predictor variables chose by Venkatesh and Davis (2000). This variable was linked to adoption intention. In this study, social influence was separated into two different variables: subjective norm and image. Further, both these two variables were linked to perceived usefulness. Based on their calculation, they found that subjective norm and image influenced perceived usefulness significantly. They also mentioned that perceived usefulness influenced adoption intention significantly. Furthermore, Sabah (2016) explored factors that could influence m-learning adoption. In their study, they found that social influence significantly predicted perceived usefulness and adoption intention. They also reported that perceived usefulness significantly predicted adoption intention. These studies discussed above lead the authors to hypothesise that:

H_4 – Social influence has an important impact on perceived usefulness.
H_5 – Social influence has an important impact on e-money adoption intention.

2.2. Theoretical framework

Fig. 1 presents the theoretical framework to be tested. In this model, attitude is linked to adoption intention (Ayeh et al., 2013; Hsu & Lin, 2008; Kleijnen et al., 2004; Kulviwat et al., 2009; Malhotra & Galletta, 1999). Moreover, perceived usefulness is linked to attitude and adoption intention (Ayeh et al., 2013; Belkhamza & Wafa, 2015; Malhotra & Galletta, 1999; Venkatesh & Davis, 2000). Furthermore, social influence is connected to perceived usefulness (Venkatesh & Davis, 2000) and adoption intention (Kleijnen et al., 2004; Kulviwat et al., 2009; Lu et al., 2005; Wang & Lin, 2011).

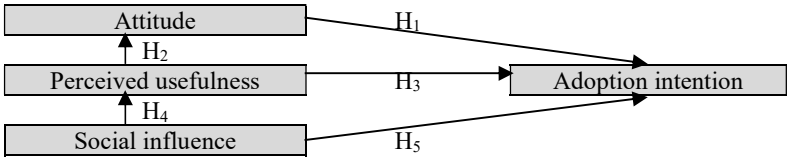

Fig. 1. The theoretical framework

3. Research method

3.1. Sample

Participants of this current study were approached conveniently through an electronic personal communication mode particularly using WhatsApp, Line, and BlackBerry Messengers. The authors obtained a help from students of the university where the authors' works were to spread an online instrument to their networks. The online instrument was developed using Qualtrics, an online survey provider.

3.2. Measures

All indicators employed in this study were adapted from existing studies. Perceived usefulness and attitude towards adoption were measured adapting indicators from Davis (1989). Further, social influence was measured using indicators adapted from Yoo and Lee (2009) and intention to adopt e-money was measured adapting indicators from Nasri (2011), Yu (2009), and Zhou (2011). Attitude was measured using a seven-point of semantic differential scale. Perceived usefulness, social influence, and adoption intention were measured using a seven-point of Likert's scale ranging from 1 for strongly disagree to 7 for strongly disagree. The instrument was written in Bahasa (language) Indonesia to be distributed in Indonesia, and in Turkish language to be distributed in Turkey.

3.3. Data analysis

In this current study, the authors took three steps to analyze the data. The first step was exploratory factor analysis. By doing this, dimensions of each variable were formed (if any), and indicators were validated. The second step was to measure the reliability of constructs. Constructs with Cronbach's alpha larger than 0.6 would be considered reliable (Hair et al., 2006). The third stage was to calculate structural equation model (SEM) to examine hypotheses. A fitness should be achieved with a probability score of 0.05 (Schermelleh-Engel et al., 2003) and a CMIN/DF score of ≤ 2 (Tabachnick & Fidell, 2007). Besides, the fitted model should have a CFI score of ≥ 0.97 (Hu & Bentler, 1995) and a RMSEA score of ≤ 0.05 (Hu & Bentler, 1999).

4. Results and discussion

4.1. Participants

In the case of Indonesia, 264 participants involved in this study containing 168 females (63.6%) and 96 males (36.4%) (See Table 1). Predominant participants were in the age between 16-25 years old. In detail, 191 participants were in the age between 16-20 years old (72.3%) and 60 participants were in the age between 21-25 years old (22.7%). Regarding marital status, 256 participants (97%) were married, six participants (2.3%) were single, and the rests were separated. Additionally, 213 participants (81.3%) graduated from high school, 35 participants (13.3%) held a bachelor certificate, and the rests held a post-grad, diploma, and less than a higher school. Furthermore, 192 participants (72.7%) claimed that they were still in a school/university, 25 participants were employed (9.5%), 26 participants were employed while studying, and the rests were unemployed. For the case of Turkey, 318 participants took part. However, only 287 of them completed the instrument consisting of 176 females (61.3%) and 111 males (38.7%). The majority of participants were aged between 21 and 25 years old (194 participants; 67.6%). All participants were students of a university and predominant of them were not married. Only three of them were separated (1%). The majority of them (176 participants) were (67.6%) and there were unmarried (282 participants; 98.3%).

Table 1
Profile of participants

		Indonesian case		Turkish case	
		Frequency	Percent	Frequency	Percent
Sex	Male	96	36,4	111	38.7
	Female	168	63,6	176	61.3
	Total	264	100,0	287	100.0
Employment status	Employed	25	9,5		
	Unemployed	13	4,9		
	Self-employed	4	1,5		
	Student	192	72,7	287	100.0
	Studying while working	26	9,8		
	Looking for a job	4	1,5		
Age	≥26	10	0,1	4	1.3
	21-25	60	22,7	194	67.6
	≤20	193	3,0	89	31.0
Marital status	Married/de facto	6	2,3		
	Unmarried	256	97,0	282	98.3
	Separated	1	,4	3	1.0
Education	Less than high school	3	1,1		
	High school	213	80,7	283	98.6
	Diploma	9	3,4	4	1.4
	Bachelor	35	13,3		
	Post grad	2	,8		

4.2 Exploratory factor analysis

Exploratory factor analysis has been implemented for four variables and resulted five constructs. Adoption intention had seven indicators with factor loadings ranging from 0.613 to 0.903. This dimension had a Cronbach's alpha score of 0.927. Attitude towards adoption possessed ten indicators with factor loadings ranging from 0.598 to 0.829 and a Cronbach's alpha score of 0.929. Further, perceived usefulness survived five indicators with factor loadings ranging from -0.830 to -0.930. This construct had a Cronbach's alpha score of 0.941. Social influence had two dimensions. The first dimension kept three indicators with factor loadings ranging from 0.606 to 0.793 and a Cronbach's alpha score of 0.781. The second dimension retained two indicators with factor loadings of -0.759 and -0.779. This second dimension had a Cronbach's alpha score of 0.896.

Table 2
The results of EFA

		Factor loadings	Cronbach's alpha
1	Adoption intention		0.927
In5	I plan to use electronic money in the future	0.903	
In6	If possible, I will try to use electronic money	0.898	
In3	I will use electronic money regularly later	0.871	
In4	I would advise my friends to use electronic money	0.870	
In1	I will use electronic money as soon as possible	0.831	
In2	I would recommend electronic money to my family members	0.822	
In7	I will try to use electronic money if I deem necessary	0.613	
2	Attitude towards adoption		0.929
A6	Practical/Impractical	0.829	
A12	Flexible time/Inflexible time	0.803	
A3	Positive/Negative	0.801	
A7	Save time/Do not save time	0.795	
A11	Worth a try/Unworthy a try	0.794	
A5	Profitable/Unprofitable	0.753	
A10	Easy to use/Uneasy to use	0.747	
A1	Good idea/Bad idea	0.744	
A13	Power save	0.742	
A8	Safe/Unsafe	0.598	
3	Perceived usefulness		0.941
P3	Generally, electronic money will be useful	-0.930	
P2	Using electronic money will increase my effectiveness in financial transactions	-0.924	
P5	The use of electronic money can help me accomplish the tasks live /work more easily	-0.910	
P1	Using electronic money will save time	-0.904	
P4	e-Money will increase efficiency in financial transactions	-0.830	
4	Social influence (1)		0.781
S5	Retailers (such as stores / mini markets / super markets etc.) will support if I use electronic money	0.793	
S6	Service providers (such as salon / barber shop / doctor, contract owner / board, etc.) will support if I use electronic money	0.781	
S4	My boss at my office / lecturer on campus / teacher at school will support if I use electronic money	0.606	
5	Social influence (2)		0.896
S1	Parents will support if I use electronic money	-0.779	
S2	My other family members will support if I use electronic money	-0.759	

4.3. Hypothesis testing

Fig. 2 shows the structural model examining the theoretical framework above. This model tested all participants both Indonesian and Turkish consumers and achieved a fitness with a probability score of 0.059, CMIN/DF score of 1.342, CFI score of 0.995, and RMSEA score of 0.025. Further, the authors conducted group analyses test for Indonesian and Turkish consumers (the models are not presented here). In assessing the Indonesian consumers, a fitted model was obtained with a probability score of 0.126, CMIN/DF score of 1.310, CFI score of 0.994, and RMSEA score of 0.034. In addition, a fitted model of Turkish consumers had a probability score of 0.109, CMIN/DF score of 1.293, CFI score of 0.991, and RMSEA score of 0.032.

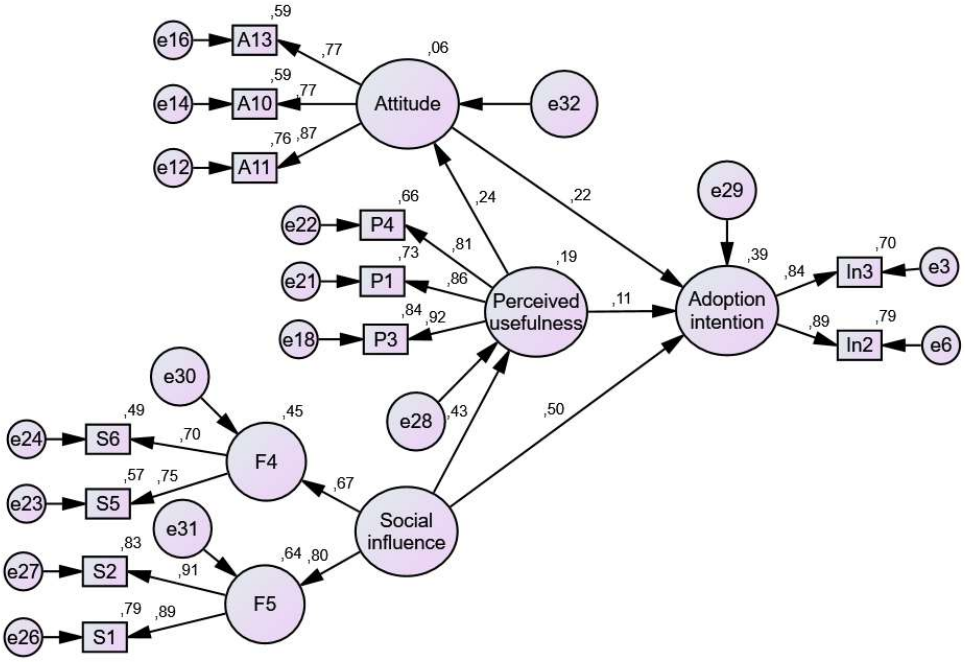

Fig. 2. Structural model of hypotheses testing

Table 3 presents the result summary of hypotheses testing. Based on the calculation, all hypotheses of all participants were greater than 1.96 and are considered significant (Hair Jr. et al., 2006). The results also show the Indonesian and Turkish cases. Of both cases, hypothesis 3 had C.R. scores of 0.596 and 1.107 respectively indicating insignificances.

Table 3
The results of testing the hypotheses

				All cases		Indonesian case		Turkish case	
				C.R.	P	C.R.	P	C.R.	P
H_1	Attitude	→	Adoption intention	4.894	***	2.318	0.020	3.542	***
H_2	Perceived usefulness	→	Attitude	5.120	***	4.544	***	3.291	0.001
H_3	Perceived usefulness	→	Adoption intention	1.983	0.047	0.596	0.551	1.107	0.268
H_4	Social influence	→	Perceived usefulness	6.537	***	5.479	***	3.842	***
H_5	Social influence	→	Adoption intention	6.395	***	6.328	***	3.855	***

4.4. Discussion

As explained in the beginning of this article, the e-money used as the object of this research is electronic money in the form of cards. In Indonesia and Turkey, there is a fundamental equation of e-money rules, that e-money is a type of card issued by a bank or non-bank. Actually, no big effort required for participants to have an e-money card. They simply go to a bank that publishes e-money and there is no need to also have an account in the bank. In fact, there are some e-money cards that can be purchased in many minimarkets, as well as from individuals who become e-money card salesmen. Indonesia and Turkey are two developing countries that are here, and there are many changes from the things that are traditional to be modern, including concerning the use of payment instruments. Both countries are fighting for a cashless society. e-Money in the last ten years continues to be introduced to the public, both by the government, the banking industry, the telecommunications industry, and the service providers. Currently, regulations are ready, infrastructure is available, and public education on the use of e-money

continues to be encouraged. It is hoped that this aggressive development can create a positive attitude of the community, including the participants in this study. The more positive the participants' attitudes toward the use of e-money, the stronger the adoption intention of the participants. The first hypothesis predicted the impact of attitude towards adoption on adoption intention. The path had a C.R. score of 5.120 indicating significance. This finding supports prior studies (Ayeh et al., 2013; Badrinarayanan et al., 2014; Hsu & Lin, 2008; Kleijnen et al., 2004; Kulviwat et al., 2009; Malhotra & Galletta, 1999). For the case of Indonesia and Turkey, the models achieved C.R. scores of 2.318 and 3.542 respectively. These values were also significant. The second hypothesis predicted the impact of perceived usefulness on attitude towards adoption. This result is promoted by existing studies (Ayeh et al., 2013; Kleijnen et al., 2004; Malhotra & Galletta, 1999). e-Money becomes mandatory when participants want to use the services of trains, buses, and entering highways. If the participants do not have e-money, they cannot take the train, bus, and enter the toll road. Some parking areas in shopping centers and offices, though not obligatory, but the managers of the buildings have offered the use of e-money for parking rental payments. Including modern stores, they have installed machines that can make their customers pay faster and easier. This condition has an impact on the positive attitude of participants towards the use of e-money. The need to use e-money does not seem to build the sincerity of participants to use e-money. Participants do not well appreciate Even e-money's ease of use, so it does not provide a stimulus to participants' intentions to adopt e-money technology.

Person's positive attitude toward e-money should increase the intention to adopt e-money technology. The third hypothesis predicted the effect of perceived usefulness on adoption intention. When two sample groups from Indonesia and Turkey were united, a value of C.R was generated. of 1,983. This value shows significance although not too large. However, when viewed per case, it turns out that perceived usefulness cannot have a significant effect on participants' intention to use e-money. In the Indonesian case, the path had a C.R. score of 0.596, and in the Turk case, the path obtained a C.R. score of 1.107. Both values were considered insignificant as less than 1.96 than expected. Therefore, both hypotheses were rejected. These findings were in contrast with the previous studies (Ayeh et al., 2013; Belkhamza & Wafa, 2015). Social influence seems to have an important role in determining participants' perceptions of the usefulness of e-money. The fourth hypothesis predicted the impact of social influence on perceived usefulness. In the three models, the path had C.R. scores of 6.537, 5.479, and 3.842 respectively. These findings supported prior studies (Ayeh et al., 2013; Belkhamza & Wafa, 2015; Malhotra & Galletta, 1999; Venkatesh & Davis, 2000). In this case, the stronger the influence of retailers, service providers, closest people in the environment of participants, parents, and families in supporting participants to use e-money, the more positive the perception of e-money. Social influence also gives positive direction to adoption intention participants. The fifth hypothesis predicted the impact of social influence on adoption intention. Some scholars have inspected this path (Kleijnen et al., 2004; Kulviwat et al., 2009; Wang & Lin, 2011; Yang et al., 2012). In this study, the path had a C.R. score of 6.845, and therefore, the hypothesis was accepted. When the benefits of e-money are felt by the service providers so that they continue to use these items to transact with their customers and even governed by regulations, both government and bank regulations, there is no other option for the service provider to keep e-money as a tool payment. If all parties have agreed while the infrastructure to implement this means of payment is readily available, then this ecosystem will be very easy to pressure stakeholders to collaborate using e-money. So, the greater the social influence felt by the participants, the stronger the influence will be on the participants' intention to use e-money.

5. Conclusion

The use of e-money in a form of a card for financial transactions broadens and increases by Indonesian consumers including for shopping, paying bills, and buying tickets. This movement is a part of national campaign initiated by the Indonesian and Turkish governments to promote a cashless society. This study intended to measure the impact of attitude, social influence, and perceived usefulness on e-money adoption intention in Indonesia and Turkey. In total, three similar models were tested: the first model included all participants, the second model consisted of Indonesian consumers, and the third model contained Turk consumers. In the first model, attitude towards adoption had an important effect on adoption intention. In addition, social influence had a significant impact on perceived usefulness and adoption intention. Further, perceived usefulness had a significant influence on attitude and adoption intention. In the second and third models, perceived usefulness failed to predict adoption intention. In this paper, a number of limitations deserve to be highlighted. This study supposed to focus only on the adoption intention of e-money for optional financial transactions. In Indonesia and Turkey, the surrounding cities where data for this study were collected, the use of e-money is mandatory, especially for public transportation. This is one of the limitations of this study. Another limitation of this study is that the participants were chosen conveniently. Therefore, the results cannot generalize all situations relating to e-money adoption intention. Another concern would be the variance associated with the variables. In order to enhance accuracy and generalizability of the findings, a larger sample size across different geographical locations and countries should be considered in future studies.

Since the Technology Acceptance Model states that perceived usefulness of a technology is influenced by its perceived ease of use. So, future studies should consider perceived usefulness and possibly other variables of e-money applications such as convertibility, anonymity, reliability, traceability, efficiency and applicability. It is also possible to include the demographic profiles of the respondents with the factors influencing users' perception toward e-money so that appropriate target e-money applications can be identified. Another possible area would be to determine the differences between the users' expectations and the actual e-money experience so that a gap analysis can be conducted.

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