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Extending the Technology Acceptance Model to Predict the Acceptance of Customer Toward Mobile Banking Service in Sulawesi Selatan

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Abstract: Over the time study on the acceptance of new technologies tend to always use the construct of Perceived Usefulness and Perceived Ease of Use of the Technology Acceptance Model (TAM), but this concept may not be able to explain the behavior of customers towards new information technologies such as mobile banking.

In this study variable, Perceived enjoyment added as new factors that reflect the intrinsic belief in the acceptance of mobile banking customers. Therefore the aims of this research are to test the influence of; 1) Perceived Ease of Use toward Perceived Enjoyment Mobile banking services, 2) Perceived Enjoyment toward behavioral intention Mobile banking services, 3) Perceived Ease of Use toward Perceived Usefulness Mobile banking services and 4) Perceived Usefulness toward behavioral intention Mobile banking services.

In this research, Survey methods and questionnaires are used as research instruments. The sample used amount 200 respondents. Data were analyzed using descriptive analysis and Structural Equation Model (SEM) to examine the relationship between variables.

Results of the Research show that: 1) Perceived ease of use affect perceived enjoyment of mobile banking positively, 2) Perceived enjoyment affect Intention to use mobile banking positively, 3) Perceived ease of use affect perceived of usefulness of mobile banking and 4) perceived of usefulness affect intention to use mobile banking positively.

Keywords: Mobile banking, Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, TAM.

INTRODUCTION

Mobile banking is one of the results of the development of mobile technology used in the commercial domain. This mobile banking combines information technology and business applications together. Thanks

to mobile banking, customers can use to obtain banking services 24 hours a day without having to visit a bank branch for personal transactions.

Compared to other e-banking services, the development of mobile banking (m-banking) consider as the most rapid. This development is due to the presence of m-banking services are able to answer the needs of a modern society which is promoting the mobility. With one touch, m-banking creates ease of banking services in one hand. Usefulness of the car banking services will increase customer satisfaction. Furthermore, mobile banking creating “value” for bank customers’ transactions as a delivery channel for wireless services.

In the last decade construct of perceived ease of use and perceived usefulness that was introduced by Davis et al. [1], considered to be important in determining a person’s acceptance and use of IT [2, 3]. These variables are fundamental beliefs (salient beliefs) that make up the Technology Acceptance Model [1]). Various researchers have examined the information system and replicate that both constructs are valid in predicting acceptance of a person in a variety of information technology [4, 5, 6]. However, depending on the context-specific technologies may be needed additional explanatory variables in addition to perceived usefulness and perceived ease of use. Davis [1] himself stated upcoming research of the acceptance of technology need to explain how other variables affect the usefulness, ease of use, convenience and user acceptance. Factors that contribute to the acceptance of new information technologies will tend to vary depending on the technology, user, and context. Currently, mobile banking is seen as an emerging information technology with the potential to change the method of access to information about a person and force the banks to change the particular organization of their business strategy. This study about the acceptance of mobile banking will enrich our understanding of one’s beliefs or motives for using mobile banking and shows how these factors affect a person’s acceptance of the mobile banking.

LITERATURE REVIEW

Technology Acceptance Model (TAM)

TAM was introduced by Davis [1]. At that time the emphasis is on reaching and identify the factors that have an impact on user acceptance of information technology effectively. A decade after the introduce of TAM in the model of Information Systems Adoption group, TAM has been accepted as a strong model, widely accepted and used in the measurement area continued the adoption of IT [7].

Davis [8] and Davis et al. [1] stated TAM as an appropriate model to explain the reasons why users accept or reject IT. TAM was developed based on Theory of Reasoned Action/TRA [9, 10] and the Theory of Planned Behavior, which is a modification of TRA introduced by Ajzen [11]. TRA is based on the assumption that people think about the impact their actions which are possible and the decision to take action based on their reasoning [10]. This means that in the case of mobile banking, mobile users will be using mobile banking if they believe that banking services will benefit them. [11]

Davis [1] identified that two factors; perceived ease of use (PEOU) and perceived usefulness (PU) as an effective factor, which affects the behavior of people when using Information Technology with the reliability of 0.98 and 0.94. Davis also found that both of those factors have a strong connection with the use of IT now and the future. Moreover, Davis concluded that PU has a stronger connection with the use

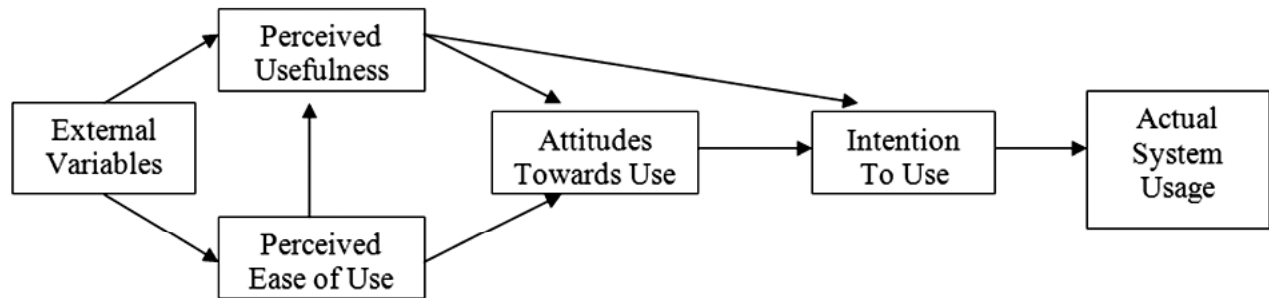


Figure 1: Technology Acceptance Model

of computer technology than PEOU. Further findings indicate that ease of use of a system has an impact on users' perceptions of the usefulness of a system.

Perceived Usefulness (PU)

Perceived Usefulness is defined as a system that is invisible to the user and stated that user will continue to use the system until the user find that the system is no longer useful. Davis [1] defines Perceived Usefulness as - the degree to which a person believes that using a particular system to improve its performance. Perceived Usefulness identified as one of the important factors that have an influence on the intention to use (intention to use) Information Technology. This issue is emphasized by most researchers which are trying to find factors that lead to the adoption of IT [1, 13, 14, 15, 16, 17; 18, 19, 20].

Perceived Ease of Use (PEOU)

Perceived Ease of Use defined as - the degree to which a person believes that using a particular system would be free from effort. The trouble using a particular system has sometimes overcome the benefits of a system and this issue describes the effect of the Perceived Usefulness on Perceived Ease Of Use of the system because the system that is easy to use look more useful and vice versa [1]. Perceived Ease of Use have a direct influence on the intention to use IT [13, 1, 14, 15, 16, 17; 18, 19, 20].

In conclusions, some scholars have examined the effect of Perceived Ease of Use and Perceived Usefulness in variety environments and different organizations and all of them conclude that those factors are valid and reliable and have an influence on the use of Information Technology [4, 21, 22, 23, 24, 25]

Furthermore TAM model evolved with various changes, written by many researchers [7, 26, 27, and 28]. For example, Venkatesh and Davis introduced an extension model of TAM, which explains how the elements of instrumental cognitive process and social influences have an impact on the Perceived Usefulness and intentions to use the Information Systems [7].

Perceived Enjoyment

Enjoyment refers to the degree at which the activities uses a system perceived personally fun [29]. This differs from the Perceived Usefulness which can be seen as an extrinsic motivation, while the Perceived Enjoyment is the intrinsic motivation to use the information system. Various studies on the perceived enjoyment [29, 30] showed that the perceived enjoyment significantly affect the intention to use the computer.

Igbaria [30] found that the perceived enjoyment is positively correlated with the time of use. While Teo et al. found that perceived enjoyment is positively correlated with the frequency of internet usage and internet usage daily [31].

Davis, Bagozzi and Warshaw [29] tested the motivational model of technology acceptance is based on intrinsic and extrinsic motivation by Deci on 1975 [32]. Their findings show that the intention of people to use a computer at work is mainly influenced by their perception of the usefulness of computers to improve their performance and following the level of pleasure they feel when using the computer. This study also emphasizes that a positive relationship usefulness and enjoyment arise that enjoyment has a greater influence on the perceived intentions when the computer system is more useful. In other words, increasing the enjoyment of a system will enrich the reception system that is useful but enjoyment has less effect on the acceptance of the system which is not useful [29]

Venkatesh found that influence the Perceived Enjoyment on the ease of use stronger for users who gain direct experience of the system [7]. Venkatesh et al [26] also found that the Perceived Enjoyment influence the perceived ease of use and perceived usefulness. Venkatesh, et al states THAT computer user who is intrinsically motivated may tend to decrease the perception of the difficulties associated with the use of the new system since perceived enjoyment will reduce the perception of use effort [26]

Sun and Zhang showed that the perceived enjoyment can be used as a trigger for the perceived ease of use, especially if the perceived ease of use is a determinant of intention to use a system [33]. Mobile bank customers tend to think that the perceived ease of use is important when the system is complex and relatively new, then by inserting variable perceived enjoyment as intrinsic motivation is expected to be a trigger for customers to use mobile banking.

Perceived Enjoyment theoretically is affecting the intention directly. If the user can experience the fun through the adoption of new technologies, adoption attitude will be positive. Someone will be more motivated to perform or repeat a fun activity than the same activity but not unpleasant. This is supported by Triandis which states that affection - "happiness, pleasure, excitement or depression, not happy, anger and hatred by a person associated with a particular action" - has an influence on behavior [34, 35]

In fact, since mobile banking can be accessed anytime and anywhere, many customers are using it to spending time or for pleasure [36]. Perceived enjoyment derived by the use of mobile banking expected to influence the attitudes and intentions to adopt it. In an adoption, a person will tend to use mobile banking that offers fun than those who did not [37].

RESEARCH METHODOLOGY

Research Design

This research was conduct in several towns in South Sulawesi Province with a consideration that those cities are centers of economic activity which also mean as central banking activities in South Sulawesi. The type of research is explanatory research which is conducted to examine the effect between variables in the hypothesized [38] and using structural equation modeling which aims to test models of measurement and structural models [39,40]by using questionnaire and cross-sectional data.

Population and Sample

The target population in this research is the conventional banking customers who are in the major cities in South Sulawesi.

To determine the minimum number of sample units, the rule of thumb in the analysis of Structural Equation Model (SEM) was used, which is five (5) times the number of parameters and analytical tools that will be used the Maximum Likelihood (ML) or Generalized Least Square (GLS). Thus the minimum sample size to be determined ranged from 150 to 400 respondents [41]. Then samples will be taken at least 200 customers mobile banking users.

The sampling technique used was purposive sampling. Respondents were found in some of the banks after the completion of their banking transactions.

Data Analysis.

Testing of Validity is done by using confirmatory factor analysis that will generate loading factor value of each indicator latent variables. The Value of loading factor which greater than 0.50 is used as a cut-off value of construct indicator validity [42].

Reliability testing is done by using the construct reliability and Variance Extracted on each latent variables. Construct reliability value greater than 0.70 is used as cut-off values of reliability construct [41]. Meanwhile value of VE which is greater than 0.50 is used [43]

To assess the causal relationship between the variables structural equation modeling used with AMOS software version 20 and characteristic of the respondents were processed using IBM SPSS version 20 software.

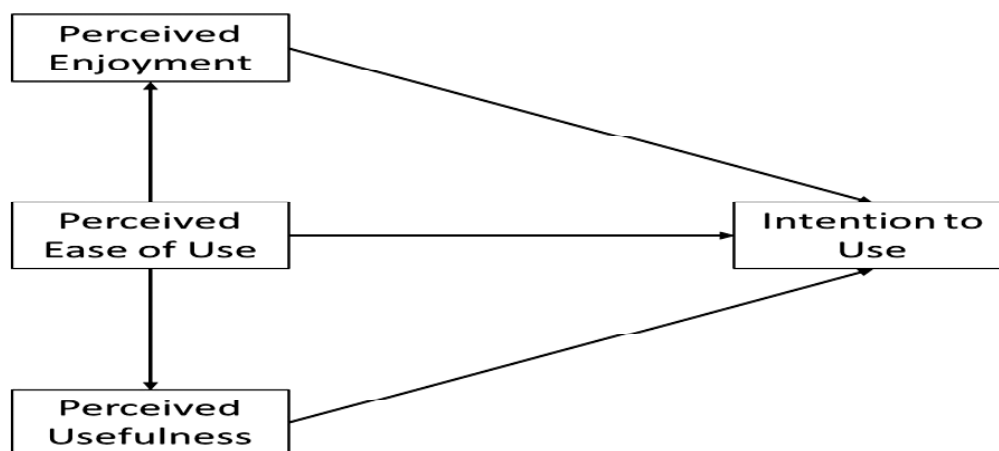


Figure 2: Conceptual Frame

Hypotheses

Hypothesis 1: *Perceived Ease of Use* has positive effects on *Perceived Enjoyment* of mobile banking service.

Hypothesis 2: *Perceived Enjoyment* has positive effects on *behavioral intention* of Mobile banking service.

Hypothesis 3: *Perceived Ease of Use* has positive effects on *Perceived Usefulness* of Mobile banking service.

Hypothesis 4: *Perceived Usefulness* has positive effects on *behavioral intention* of Mobile banking service.

RESEARCH RESULT

Samples Characteristics

Characteristics of the sample in study show that the sample is mostly Male respondents. This shows that in the case of banking and mobile banking, men are still more dominant in decision making. Wan et.al found that men are more open to adopting banking technology than women, the same thing was found by Pijpers et.al (2001) which states that men are more positive than women about mobile commerce [44, 45]

The age range is for most of 25 years to below 35 years as many as 100 people or about 50% of the total respondents, it is indicated that this age range is more open to adoption of new things, including new technologies. This is in line with the findings of Wood and Swait [46] which states certain characteristics of the user can produce a certain type of behavior

Venkatesh and Morris in 2000 found that it is important to get a good understanding of the difference in age, as it relates to the acceptance and use of new information technologies [47]. Early adopters of new product groups are usually younger group in most of the technology market. According to Polataglu and Ekin [48], which describes the demographic factor groups that adopt electronic banking is a young, influential and highly educated.

Occupation of the respondents in this study consisted of as many as 60 people or about 30% of the respondents as Professional. Followed by groups of civil servants (13%) and group Entrepreneurs (13%) in fact are most often associated with banking business. Furthermore, the next responder group is a group of students, it is consistent with the fact the students are the group that has the openness to new technologies and mobile technology is not a new thing for them.

The Income of Respondents in this study range between 2.5 million to 5 million per month which is the largest group with a total of 87 people, or about 43% of the total respondents. This group includes the upper middle income group is in line with studies conducted by Mattilla et.al reported that most users of e-banking are young age to middle age, relatively wealthy and highly educated.[49]

Most respondents in this study are long enough relation with their bank. Approximately 140 people or 70% of the total respondents are customers with long relation with between 3-5 years. This suggests that loyal consumers are likely allowing them to try other services offered by the company [50].

Education respondents in this study are mostly high educated. This indicates the level of awareness and the ability of customers to make informed choices, or at least have the ability to encourage those who are more educated to get more from banking services.

Statistical Result

From validity and reliability appendix variables in this research shows that all the indicators used in this study are valid, it can be seen from the Standardized Loading Factors that have a value above 0.5, which means that all indicators are a valid tool to measure the research construct. While the value of construct Reliability is all above 0.70 and Variance Extracted value are above 0.50 showing good reliability research constructs.

Figure 3 shows the results of estimation of influence between variables using AMOS software version 20. It can be seen all the criteria Goodness of Fit Indices as follows: Chi-Square expected small which is

Table 2
Validity and Reliability of Variables

Variables	Indicators	Standardized Loading Factors	Standard Errors	T value	Reliability		Remark
					CR	VE	
Perceived Enjoyment	y11	0.744	0.256	5.744	0.79	0.65	Good Reliability and Validity
	y12	0.801	0.280	5.654			
	y13	0.825	0.204	5.451			
	y14	0.575	-	-			
Perceived Ease of Use	y21	0.628	0.133	7.119	0.76	0.52	Good Reliability and Validity
	y22	0.589	0.118	6.738			
	y23	0.632	0.110	7.97			
	y24	0.739	-	-			
Perceived Usefulness	y31	0.593	0.13	6.284	0.74	0.51	Good Reliability and Validity
	y32	0.672	7.013	7.456			
	y33	0.652	0.122	7.49			
	y34	0.695	-	-			
Intention to Use	y41	0.645	-	-	0.75	0.58	Good Reliability and Validity
	y42	0.656	0.139	7.757			
	y43	0.783	0.151	8.419			
	y44	0.683	0.145	7.607			

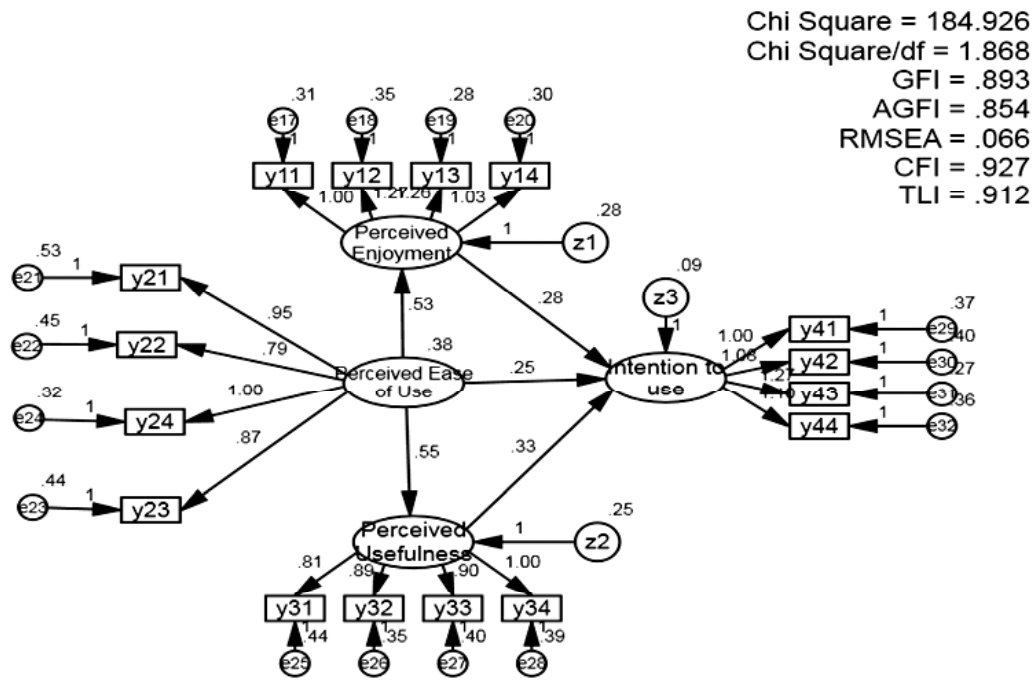


Figure 3: Estimation Results

184.926, CMIN/DF were below 2 which is 1.868, GFI almost 1 which is 0.893, the AGFI almost 1 which is 0.8549 TLI above 0.90 which is 0.927 and RMSEA below 0.08 which is 0.066. These criteria show that the data in this study are a good fit.

Hypotheses Testing

Table 3
Influence between Variables

			<i>Standardized</i>	<i>S.E.</i>	<i>C.R.</i>	<i>P</i>	<i>Label</i>
Perceived Usefulness	←	Perceived Ease Of Use	.562	.098	5.600	***	par_3
Perceived Enjoyment	←	Perceived Ease Of Use	.528	.098	5.426	***	par_5
Intention to use	←	Perceived Ease Of Use	.298	.094	2.623	.009	par_1
Intention to use	←	Perceived Usefulness	.387	.090	3.657	***	par_2
Intention to use	←	Perceived Enjoyment	.339	.074	3.759	***	par_4

Hypothesis 1: *Perceived Ease of Use* has positive effects on *Perceived Enjoyment* of mobile banking service. From table 3 above shows standardize regression coefficient is 0.528 with Probability 0.000 then this hypothesis accepted.

Hypothesis 2: *Perceived Enjoyment* has positive effects on *behavioral intention* of Mobile banking service. It can be seen from table 3 above shows standardize regression coefficient is 0.339 with Probability 0.000 then this hypothesis accepted.

Hypothesis 3: *Perceived Ease of Use* has positive effects on *Perceived Usefulness* of Mobile banking service. From table 3 above shows that standardize regression coefficient is 0.562 with Probability 0.000 then this hypothesis accepted.

Hypothesis 4: *Perceived Usefulness* has positive effects on *behavioral intention* of Mobile banking service. It can be seen from table 3 above that standardize regression coefficient is 0.387 with Probability 0.000 then this hypothesis accepted.

CONCLUSION

Perceived Enjoyment has a significant direct effect on the intention to use mobile banking. It can be concluded that the better the customers' perception of enjoyment mobile on banking services, the higher the intention to use the mobile banking service. Perceived Ease of Use variable has a direct positive direct effect on the perception of usefulness. This shows that the higher the perceived ease of use of the customers on the mobile banking service, the higher the perceived usefulness of the mobile banking services and vice versa. Variable Perception Ease of Use has a positive direct impact directly on the intention to use. Thus the higher the perceived ease of the customers on the mobile banking service, the higher the intention to use the mobile banking service. Perceived Usefulness variable has a positive direct effect on the intention to use. This means that the higher the customers' perception of the usefulness of the mobile banking services will be also higher Intention to use mobile banking services

Suggestions from the results of this study are as follows: (1) to increase the interest of customers using mobile banking services, banks could conduct training for its customers provided all branch offices of the bank.

- (2) The banks should prepare a document that includes information about their mobile banking services in detail. The information should emphasize on fast, comfortable, anywhere, anytime and availability of information.
- (3) Display mobile banking should be carefully designed and easy to navigate to attract the attention of potential adopters.
- (4) Publicity in various media using trustworthy endorser who demonstrates the benefits, convenience, and usefulness of mobile banking services.
- (5) Customer perceptions about mobile banking services must be constantly monitored, to the regular survey on customers' feedback and opinion should be taken to ensure continuous service improvement.
- (6) Emphasis on the marketing strategy that focuses on the pleasure and ease of use of mobile banking to encourage the adoption rate of mobile banking services.

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