Internet Banking Adoption Analysis in Medan and Bandung City Using the Unified Theory of Use and Acceptance of Technology (UTAUT) Model with Culture as Moderator

Refi Rifaldi Windya Giri, Venesya Wanda, Herry Irawan
School of Economics and Business
Telkom University
Bandung, Indonesia
rifaldi@telkomuniversity.ac.id

Abstract—**The number of internet users increase in Indonesia. Seeing this potential, many banks in Indonesia were intensified to promote online banking services by using internet media called the Internet banking. This study uses a model of technology acceptance UTAUT and add Hofstede culture as moderator. The study was conducted by distributing questionnaires in Medan and Bandung with a number of 305 respondents who use internet banking. The sampling technique used in this study is convenience sampling. The results showed that: (1) Utility and Effort Expectancy are the most influence construct on behavioral intention of using internet banking (behavioral intention). (2) Culture Hofstede (Masculinity, Uncertainty Avoidance, Individualism and Power distance) has no effect as moderators. (3) Behavioral Intention to Use Behavior has the most significant effect in this study.**

Keywords—*internet banking; UTAUT; culture; hofstede*

I. INTRODUCTION

Information technology (IT) helps many aspect of human life, including for banking purpose. Banks use information technology to serve their customer better. Adaptability of customer toward the use of IT become an importance aspect.

The population of Internet users in Indonesia is increasing. In 2013, Internet users reached 72.8 million and continues to increase to 85.7 million users by 2014. It is estimated that internet users in Indonesia will continue to increase until 2018 with 123 million users. Seeing this potential, many banks in Indonesia were intensified to promote online banking services, by using the internet.

Various advantages have been offered via internet banking, but the system is less attractive and very rarely used by customers who have the facility to access internet banking. Most of these customers prefer waiting in line at a bank or use an ATM (Automated Teller Machines) to conduct their banking transactions while it is possible to use internet banking [1].

Based on the results of MARS' survey in 2013 revealed that of 1,710 customers in five cities (Jakarta, Bandung, Semarang, Surabaya, Medan) surveyed, 34.7% stated aware of internet banking. Bandung customers are the most aware of internet banking compared to other cities, with a share of 39.3%. Followed by Jakarta (38.9%), Semarang (32.5%), and Surabaya (32%). While the level of customer awareness in the field was the lowest, at only 28.6%. Unfortunately, the level of awareness of internet banking which is already quite high, it is not followed by penetration rate, which reached 8.1%. There are still 91.9% of customers who have not used or have internet banking account. Customer in Medan indicated levels of internet banking account ownership highest (16.6%) if by city, far compare to other cities. Bandung and Semarang by 7.2%, and Surabaya 6.1%. In Jakarta, as a government and economic center, internet banking penetration rate of merely 5.8%.

The number and value of transactions from the annual reports of the four major banks in Indonesia at 2013 is displayed in table 1.

TABLE I. NUMBER OF ELECTRONIC MONEY TRANSACTION

	Bank Mandiri	BCA	BRI	BNI
Number of Transactions ATM (million)	912	1462	1150.7	573.4
Number of Transactions Internet Banking (million)	310.8	896	23,9	8.9
Value of Transactions ATM (trillion)	1541	757.8	350.2	38.2
Value of Transactions Internet Banking (trillion)		4732	26.8	38.2

Based on MARS research conducted in five cities in Indonesia, where the level of awareness in the city has the highest percentage who use internet banking but still slightly Medan has the lowest level of awareness but has a higher penetration, and Bandung has the highest level of awareness but has a lower penetration.

As this study used a model UTAUT technology acceptance and use Hofstede cultural moderators. This study was adapted from research conducted by Bankole et.al. [2].

II. LITERATURE REVIEW

Min et.al. stated that user adoption toward IT is one of the key requirements for realizing technology utilization and value [3]. The most commonly used theories in IT adoption including technology acceptance model (TAM), extended technology acceptance model (TAM2), theory of reasoned action (TRA), theory of planned behavior and the unified theory of use and acceptance of technology (UTAUT) [4].

This study uses UTAUT model, which has four main constructs, namely performance expectancy, effort expectancy, social influence, and facilitating conditions as a direct determinant of behavioral intention and use behavior [4]. In this model, performance expectancy is replaced by utility expectancy [2,3].

Previous research suggests that culture has an important role in the use and adoption of information technology [5]. Erumban and de Jong, 2006 says that culture affects the rate of adoption of information and communication technology in a country. Culture shape the perception of individuals whose consequences will impact on their decision to adopt the technology or not.

Culture can be described as a construct moderating effect on the level of significance of the relationship Source: Annual Report 2013, Bank Mandiri, BRI, BCA, and BNI between independent and dependent variables in the model of technology adoption [2,6,7].

This study used a modification of the UTAUT model studied by Bankole et al., 2011 which constructs facilitating condition is eliminated, while performance expectancy changed to utility expectancy due to better suit the assessment of internet banking [2,3]. In addition, there are another construct such as trust and privacy, user satisfaction, cost and convenience and dimension of Culture. The addition of the construct of trust and privacy, user satisfaction, cost and convenience, and Culture on research Bankole et al., 2011 adoption of research UTAUT models proposed by Min et al., [3]. Dimensions of Culture consisting of power distance, uncertainty avoidance, individualism, masculinity serve as antecedent variables [2].

From the results of research conducted by Bankole et al., Constructs Culture is a construct of the most influential on the use of mobile banking in Nigeria compared to other constructs. As well as research conducted by Srite and Kaharana [7], Culture serve as moderator. Some constructs Culture also have a significant effect on the research Laukkannen and Cruz [8].

In this study, the dimensions of Culture serve as moderator variables as in previous studies that have been conducted by Alshare et al. [9], Huang et al. [10], Srite and Kaharana [7] which replaces the moderator demographics [4]. Some scholars want to do research in Indonesia by making the dimension of culture as a moderator to examine the influence of culture as a

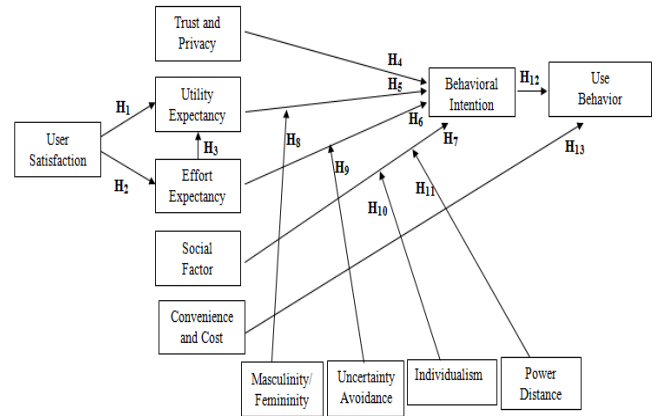moderator on the use of internet banking. Below is the framework of this research.

Fig. 1.   Research framework.

III. RESEARCH METHODOLOGY

Quantitative research methodology was used to develop the model and hypotheses.

The population for this research is the people who use banking service from Bank Mandiri, Bank Central Asia (BCA), Bank Rakyat Indonesia (BRI) and Bank Negara Indonesia (BNI) in Medan and Bandung city. The sample size was 305 customers. The respondents who have internet banking experience in those population were selected using a purposive sampling method, whereby respondents were screened to ensure that they met the study criterion.

The questionnaire developed can be divided in two main parts. The first part dealt with socio-demographic characteristics. The second, referring to the measurement of internet banking adoption. Descriptive statistics and partial least square was use in processing the data.

The instrument (questionnaire) that was used in this study was tested for both validity and reliability using SPSS for windows version 20. The corrected item-total correlation value for all items are above r-table 0.113 for 305 samples with n-2 degree of freedom. Therefore the questionnaire was valid. In reliability test, all the items had the Cronbach Alpha value above 0.60 [11]. Therefore the questionnaire was reliable.

IV. RESULTS AND DISCUSSION

A. Data Analysis

The data produced 305 responses for the data sample. The sample consisted of 45.6% male and 54.4% female. The proportion of gender is almost balance. Table 2 represents the respondent's demographic characteristics.

The largest group in the data sample was between the age group of 21-30 years consisting of 65.9% followed by the age group of 31-40 years consisting of 16.4%.

The educational level of respondents mostly were under graduated with 67.2% follow by high school with 24.6%.

While average monthly income were distributed almost evenly between 2-5 million rupiah and 5-10 million rupiah.

The respondents mostly had 1 bank account with 86.6%, and 58.7% respondents had experienced in using internet banking between 1-3 years. In term of frequency of using internet banking mostly less than 5 times a month with the proportion of 75.5%. The proportion of respondents that access internet banking service using 2 gadgets are 34.8%, follow by 1 gadget with 31.1% and 4 gadgets with 30.8%.

B. *Outer Model*

Table 2 represent the outer loading value for each indicator that processed with Smart PLS 3.0. The items is valid if it has outer loading value above 0.5.

TABLE II.   OUTER LOADING VALUE

Variable		Outer Loading
User Satisfaction	US1	0.828
	US2	0.760
	US3	0.771
	US4	0.862
Trust and Privacy	TP1	0.827
	TP2	0.874
	TP3	0.893
	TP4	0.873
	TP5	0.817
Utility Expectancy	UE1	0.773
	UE2	0.856
	UE3	0.845
	UE4	0.819

Table 2. Cont.

Effort Expectancy	EE1	0.863
	EE2	0.920
	EE3	0.853
	EE4	0.850
Social Factors	SF2	0.564
	SF3	0.848
	SF4	0.867
	SF5	0.684
Cost and Convenience	CC3	1.000
Behavioral Intention	BI1	0.788
	BI2	0.927
	BI3	0.923
	BI4	0.793
Individualism	IDV1	1.000
Power Distance	PD2	1.000
Uncertainty Avoidance	UA2	0.770
	UA3	0.811
	UA4	0.884
Masculine/Feminine	M / F1	0.603
	M / F2	0.789
	M / F3	0.879
	M / F4	0.789
Use Behaviour	UB1	0.773
	UB2	0.716
	UB3	0.840
	UB4	0.732
Moderator	EE * UA	1.000
	SF * IDV	1.000
	SF * PD	1.000
	UE * MF	1.000
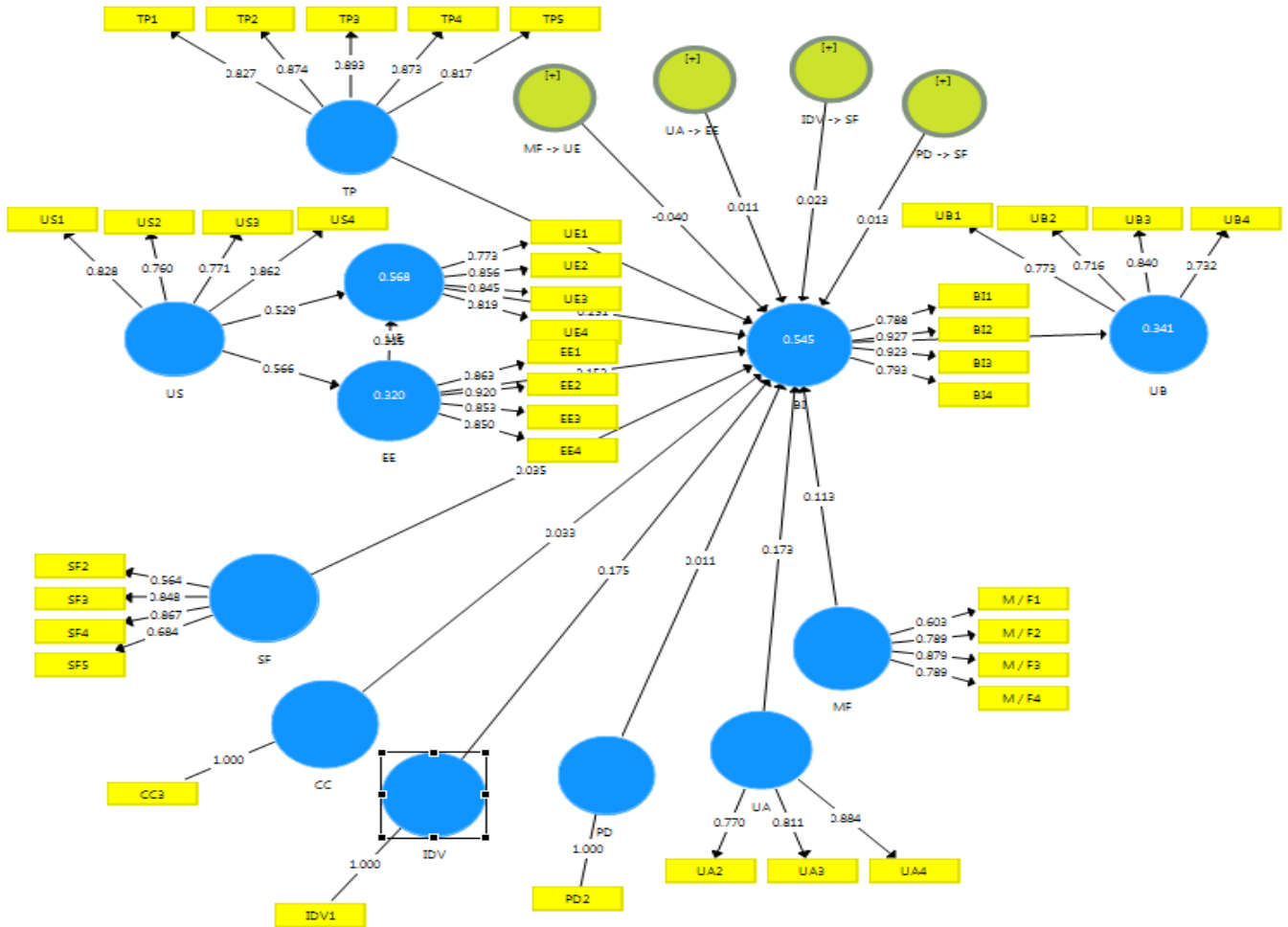
Fig. 2. PLS algoritm.

TABLE III. COMPOSITE RELIABILITY AND CRONBACH ALPHA

	Composite Reliability	Cronbach Alpha
BI	0.919	0.881
CC	1.000	1.000
EE	0.927	0.895
IDV	1.000	1.000
IDV -> SF	1.000	1.000
MF	0.853	0.772
MF -> UE	1.000	1.000
PD	1.000	1.000
PD -> SF	1.000	1.000
SF	0.834	0.747
TP	0.933	0.910
UA	0.863	0.761
UA -> EE	1.000	1.000
UB	0.851	0.769
UE	0.894	0.842
US	0.881	0.822

To validate the measurement model, convergent validity was evaluate by examining composite reliability and average variance extracted (AVE) from the measures. Value from Table 3, the value of composite reliability each construct was above 0.70 so it can say that all constructs were reliable.

Reliability of the constructs also can be determine from Cronbach Alpha value that minimum 0.70.

C. Inner Model

In this study, the constructs that has significant effect on behavioral intention of use internet banking is utility expectancy and effort expectancy. Similarly, a study conducted by Bankole et al., [2], utility expectancy and effort expectancy is a construct of the most influential on the use of internet banking than other constructs.

User satisfaction significantly influence the effort expectancy with T-statistic = 11.751. Meaning that the higher consumer satisfaction in using the technology, the higher the expectation or belief that Internet banking user is easy to use. User satisfaction also significantly influence the utility expectancy with T-statistic = 10.908. Meaning that the higher consumer satisfaction in using the technology, the higher also user expectations or beliefs of the benefits of internet banking. This is according to research conducted by Bankole et al., [2].

TABLE IV.   STATISTICAL RESULTS

Hypothesis		Path Coefficient	T-Statistic	T-Tabel	Decision
H1	US -> EE	0.566	11.751	1.970	Ho Rejected
H2	US -> UE	0.529	10.908	1.970	Ho Rejected
H3	EE - > UE	0.315	5.804	1.970	Ho Rejected
H4	TP -> BI	0.066	1.255	1.970	Ho Rejected
H5	UE -> BI	0.251	3.298	1.970	Ho Rejected
H6	EE -> BI	0.152	2.028	1.970	Ho Rejected
H7	SF -> BI	0.035	0.533	1.970	Ho Rejected
H8	Int M/F ->UE->BI	-0.040	0.721	1.970	Ho Accepted
H9	Int UA ->EE->BI	0.011	0.163	1.970	Ho Accepted
H10	Int IDV->SF->BI	0.023	0.436	1.970	Ho Accepted
H11	Int PD->SF->BI	0.013	0.253	1.970	Ho Accepted
H12	CC -> BI	0.033	0.549	1.970	Ho Rejected
H13	BI -> UB	0.584	14.596	1.970	Ho Rejected

Trust and privacy, cost and convenience do not affect to behavioral intention of use internet banking. This same with their result in conducted by Bankole et al., in Nigeria [2].

Moderator Culture Hofstede in this study (uncertainty avoidance, power distance, masculine/feminine, and individualism) did not moderate the relationship between variable utility expectancy, effort expectancy and social factor. That is the culture does not strengthen the influence of utility expectancy, effort expectancy and social factor of the interest in using internet banking (behavioral intention).

Construct that has the most significant influence in this study were between behavioral intention variables and use behavior. Behavioral intention to behavior use has T-statistic 14.596. That is greatly influencing user of intention in using the Internet banking. The results also supported by research Bankole et al. [2], Raman and Don [12].

The limitation of this research is that selected respondent in this study represent participant only in Medan and Bandung city. It was assumed that there is different culture between that city especially in using internet banking.

V.   CONCLUSION

User satisfaction has a significant influence on the effort expectancy and utility expectancy. And effort expectancy has had a significant influence on the utility expectancy. Effort expectancy and utility expectancy has a significant influence on behavioral intention [13]. However, trust and privacy, social factors, and the cost and convenience do not have a significant effect on behavioral intention [14]. Hofstede Culture as moderator does not have a significant impact to the relationship between variable utility expectancy, effort expectancy and social factor. While Behavioral Intention to have a significant effect on use behavior [15]. Although this is still an early stage for internet banking research in Indonesia, the observations revealed some useful findings about the role that culture plays in the user behaviour and adoption of internet banking in the country. The perceptions of internet banking are not significantly influenced by the cultural values of individuals in Indonesia [16].

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