

Analysis of Factors Influencing Adoption of Mobile Banking in Indonesia

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Abstract: *The percentage of mobile banking users in Indonesia is still low compared to the internet users and smartphone users. Whereas, mobile banking has some features which is its users will have more productivity and benefits if they are using it. This phenomenon could leads Indonesian people to unproductivity while time utilization will be more important as the changes of Indonesia and overseas economic condition. Eight factors are predicted to be the factors that may influence the mobile banking adoption. The factors represented by using Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) with extension of trust. The purpose of this study is to investigate the factors influencing behavioural intention and adoption of Mobile banking by customers of Indonesian 4 top banks. Cross-sectional data was collected by conducting an online survey questionnaire completed by 385 respondents. The results show performance expectancy, social influence, hedonic motivation, price value, and trust has positive influence to behavioral intention while effort expectancy has no positive influence to behavioral intention. Effort expectancy and trust have positive influence to performance expectancy. Behavioral intention has positive influence to adoption.*

Keywords: adoption, mobile banking, SEM, trust, UTAUT2.

1. Introduction

Currently the development of Internet in Indonesia shows a rapid development. Based on We Are Social in 2016, the number of internet users in Indonesia is increased by 15% since previous year and in 2017, the number of internet users in Indonesia is increased by 51% since the previous year. Those numbers proof that the number of internet users is increasing year to year. Until January 2017, there are 132.7 million of internet users in Indonesia [1].

As the increasing number of internet users, the number of smartphone users are also increasing. As shown in figure 1.6, in January 2017, the number of smart phone users is 47% from the total adult population which is increased since last year that only has 43% users [1]. The usage percentage of mobile banking is only 33% which it is the lowest compare to other activities which are mobile messaging is 44%, watching videos is 50%, playing games 42%, and mobile map services is 39% [1]. Noviadhista (2015) also mentioned that the intention to use mobile banking is not same as the increasing of smartphone users in Indonesia [2].

Whereas, according Kharisma in Okezone (2016), mobile transaction will give benefit to the citizen specially in the matter of time and security which means the time that used to do non-mobile transaction could be utilized to do more productive things and give more benefits to mobile banking users. Kharisma also said that in based on Indonesia and overseas economic condition nowadays, citizen should be more aware that how important time utilization is [3]. Mobile banking enables their users to do transfer to other account, pay bills (i.e. credit card bill, telephone bill, internet, bill, TV subscription bill, etc.), voucher purchase and e-commerce, and check account information and exchange rate (Wahyuni, 2017) [4].

Based on Otoritas Jasa Keuangan, there are 4 public company banks, 75 national public private banks, 27 regional development banks, and 9 foreign banks in Indonesia [5].

According to total asset per quarter-1 2017, profit 2016, and top brand index in 2017, there are 4 top banks in Indonesia; Bank Rakyat Indonesia (BRI), Bank Mandiri, Bank Central Asia (BCA), Bank Negeri Indonesia (BNI) [6, 7, 8].

As explained before, the percentage of mobile banking users in Indonesia is still low compared to the internet users and smartphone users. Whereas, mobile banking has some features which is its users will have more productivity and benefits if they are using it. This phenomenon could lead Indonesian people to unproductivity while time utilization will be more important as the changes of Indonesia and overseas economic condition.

2. Literature Review

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is chosen as the model of this research. UTAUT2 is the latest model to identify the technology acceptance nowadays because the model is formulated based on eight prior technology acceptance theories; Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM-TPB (C-TAM-TPB), Model of Personal Computer Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT) [6]. Compared to UTAUT, UTAUT2 explained about 70 percent of the variance in the behavioral intention to use a technology and about 50 percent in technology use behavior [6]. Besides that, the addition variables that proposed in UTAUT2 such as price value, hedonic motivation, and habit are making UTAUT2 is suitable for consumer context which means it also suitable to describe the mobile banking technology acceptance [9]. UTAUT2 model also used by recent researchers, for example Alalwan et al. (2017), studied about factors influencing adoption of mobile banking in Jordan, and Trojanowski and Kulak (2017), studied about factors influencing intention to use a mobile phone for purchases [10, 11].

The author made some modification on the independent variable based on the need of the research. The model in this research does not consider the role of habit. This was based on the targeted respondents which is the author targeted potential users of mobile banking. Potential users do not have rich experience while to examine the role of habit, the customers should have a rich experience in using such technology [10]. Inclusion of trust as independent variable is another modification of this research. The author made trust to have indirect influence to the behavioral intention via performance expectancy. According to prior research of Mobile banking, trust has been proved as crucial factor in determining customer's perception and intention to adopt such technology. For instance, Alalwan et al. (2017) proved trust as the most significant factors predicting the customers' intention to adopt mobile banking in Jordan [7]. UTAUT2 without trust were only able to predict about 59 percent of variance in behavioral intention while the inclusion of trust increased the result to 65 percent [10]. The result could be caused by the nature of electronic banking services which is characterized with the high uncertainty coupled with the nature of the financial service, which could be characterized as high risky product [10].

In the UTAUT2 model of Venkatesh et al. (2012), use behavior is the dependent variable of the model, but in this research the author changed use behavior to be adoption as the dependent variable. The change was based on the purpose of this research which is the research is aims to predict how the potential customers want to start to using mobile banking. This change is also adapted from previous research that also aimed to predicted the adoption of mobile banking. For instance, Zhou et al. (2010) used adoption as dependent variable to replace use behavior [12]. Based on the explanation above, the UTAUT2 model of this research is formulated as shown in figure 1 below.

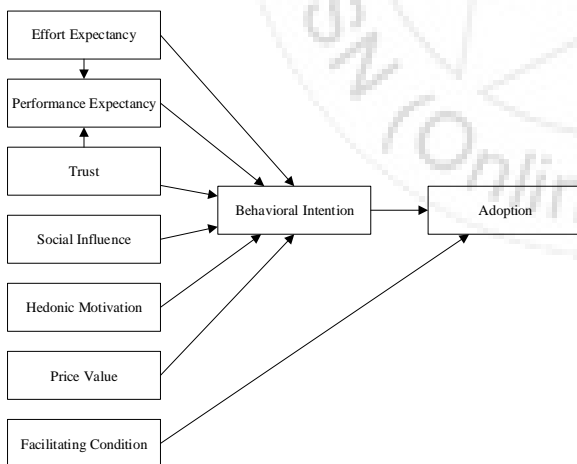


Figure 1: The research model

The definition of each independent variables adapted and based on Venkatesh et al. (2003, 2012) are described as follows: performance expectancy is defined as the degree to which an individual believes that using mobile banking will help him or her to attain gains in job performance; effort expectancy is defined as the degree of ease associated with the use of mobile banking; social influence is defined as the degree to which an individual perceives that important others believe he or she should use mobile banking; facilitating

conditions is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use mobile banking; hedonic motivation is defined as the fun or pleasure derived from using mobile banking; price value is defined as consumers' cognitive trade-off between the perceived benefits of mobile banking and the monetary cost for using it [13, 9]. The addition variable of trust is defined as the degree to which an individual believes on the honesty, security, and capability of mobile banking. Jati and Laksito (2012) in Suryana (2014) defines behavioural intention as the level of desire to use mobile banking continuously with the assumption that users have access [14].

3. Measurement Material

Items that covers the whole variables to be measured. The items should be valid in order to have accurate and good data result. To make the questionnaire items valid, content validation need to be conducted. According to Indrawati (2015:147), one of the methods to fulfil the content validity criteria is by adopts and modifies the items of well accredited national or international journal research [15]. The items of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and behavioral intention are adopted from Venkatesh et al. (2003, 2012), items of trust are adopted from Gefen et al. (2003), and items of adoption are adopted Püschel et al. (2010) and Zhou et al. (2010) [13, 9, 16, 17, 12].

The author also modified the items and delivery the questionnaire in Indonesia language in order to be understandable for the respondents which is they are the customer of 4 top banks in Indonesia that has been never use mobile banking but have knowledge about mobile banking. The author also done consultation to an expert in the field of marketing and digital technology. The expert gave suggestions in order to make the questionnaire items are more valid and reliable when it is read by a respondent. Through content validation and consultation, the questionnaire items are formulated as shown as in the table 1 below.

Table 1: Questionnaire items

Item Code	Items of performance expectancy
PE1	I find Mobile banking useful in my daily life.
PE2	Using Mobile banking increases my chances of achieving tasks that are important to me.
PE3	Using Mobile banking helps me accomplish tasks more quickly.
PE4	Using Mobile banking increases my productivity.
Item Code	Items of effort expectancy
EE1	Learning how to use Mobile banking is easy for me.
EE2	My interaction with Mobile banking is clear.
EE3	My interaction with Mobile banking is understandable.
EE4	I find Mobile banking easy to use.
EE5	It is easy for me to become skilful at using Mobile banking
Item Code	Items of social influence
SI1	People who are important to me think that I should use Mobile banking.
SI2	People who influence my behaviour think that I

	should use Mobile banking.
SI3	People whose opinions that I value prefer that I use Mobile banking.
Item Code	Items of facilitating conditions
FC1	I have the resources necessary to use Mobile banking.
FC2	I have the knowledge necessary to use Mobile banking.
FC3	Mobile banking is compatible with other technologies I use.
FC4	I can get help from others when I have difficulties using Mobile banking.
Item Code	Items of hedonic motivation
HM1	Using Mobile banking is fun.
HM2	Using Mobile banking is enjoyable.
HM3	Using Mobile banking is entertaining.
Item Code	Items of price value
PV1	Mobile banking is reasonably priced.
PV2	Mobile banking is good value for the money.
PV3	At the current price, Mobile banking provides good value.
Item Code	Items of behavioral intention
BI1	I intend to use Mobile banking in the future.
BI2	I will always try to use Mobile banking in my daily life.
BI3	I plan to use Mobile banking in future.
BI4	I predict I would use Mobile banking in the future.
Item Code	Items of trust
TR1	I believe that Mobile banking is trustworthy.
TR2	I trust in Mobile banking.
TR3	I do not doubt the honesty of Mobile banking.
TR4	I feel assured that Constitution of Information and Electronic Transaction protect me from problems on Mobile banking.
TR5	I feel assured that technological structures adequately protect me from problems on Mobile banking.
TR6	Even if not monitored, I would trust Mobile banking to do the job right.
TR7	Mobile banking has the ability to fulfil its task.
Item Code	Items of adoption
AD1	Balance enquiries.
AD2	Downloaded bank statements.
AD3	Funds transfer.
AD4	Requesting cheque book.
AD5	Requesting bank certificates.
AD6	Paying bills.
AD7	Request increase in credit card(s).
AD8	Pay any balance due.

In order to guarantee that the items are valid and reliable in the reality, the author conducted a test of pilot study. The pilot study used 7-point Likert Scale as the measurement scale for each item. The pilot study test was successfully captured the preliminary data from 30 respondents. The captured data was analysed by using the help of IBM SPSS Statistics 21 software. The analysis process result showed the corrected item-total correlation value of each item and cronbach's alpha value of each construct. The result shown that all items' corrected item-total correlation value is higher than 0.40 and all variables' cronbach's alpha value is higher than 0.70.

From the result, it can be concluded that the whole items are valid. An item can be determined as valid if the corrected item-total correlation value of each variable is greater than 0.40 as the minimum correlation coefficient that suggested by Guilford (Indrawati, 2015:149) [15]. The whole constructs also stated as reliable based on the minimum cronbach's alpha value which is 0.70 (Hair et al., 2010:125) [18].

4. Research Method

This research use Variance Based Structural Equation Modelling. Structural Equation Modelling is a technique to test and estimate causal relationships by integrating factor analysis and path analysis (Abdillah and Jogiyanto, 2015:140) [19]. According to Indrawati (2015:198), statistical analysis of VB-SEM is Partial Least Square (PLS) which is focus on predicting (variance explanation) and for exploratory [15]. PLS as prediction model does not assume certain distribution to estimating parameter and predicting causal relation [19]. Therefore, parametric technique to test parameter significance is not required and evaluation model to non-parametric prediction. PLS model evaluation done by evaluating outer model and inner model (Abdillah and Jogiyanto, 2010:193) [19].

5. Research Result

Cross-sectional data was successfully collected by conducting an online survey questionnaire completed by 385 of 4 top Indonesia banks non-mobile banking users who know about mobile banking. The data was analyzed using the help of SmartPLS 3.0 program.

5.1 Respondent Characteristic

From the gathered data, respondent characteristic is obtained. Based on used bank, Bank Mandiri customers are majority of the respondents with 151 respondents out of 385 respondents. Bank Negara Indonesia takes the second place with 109 respondents then sequently followed by Bank Rakyat Indonesia (BRI) with 74 respondents and Bank Central Asia (BCA) with 51 respondents. Based on gender female respondents dominate the total respondent which is there are 243 female respondents out of 385 respondents. Based on age, most of the respondent is in 18 – 29 years old with 224 respondents. based on educational level, senior high school level respondent dominates the respondent characteristic which is there are 192 respondents. Based on domicile, most of the respondent is in west Indonesia with 207 respondents. Based on income per month, the < Rp. 1,500,000 category dominates the respondent characteristics with 135 respondents. Based on mobile experience most of the respondent have more than 3 years mobile device experience with 307 respondents. Based on internet experience, most of the respondent have more than 3 years internet experience with 350 respondents.

5.2 Indicator Reliability

The researcher calculated the indicator reliability by observing the outer loading of each indicator. The result

shows that all indicators' loading are higher than 0.70 which can be concluded as reliable indicator expect AD2, AD4, AD5, and AD7. Adoption has only 4 reliable indicators which have outer loading greater than 0.70. According to Heir et al. (2011), indicator loadings should be higher than 0.70 [20]. It means the researcher should try to remove the indicators that not reliable and test the indicator reliability again. after researcher removed AD2, AD4, AD5, AD7, and AD8, the result show that all indicators are reliable. AD8 is also removed because after AD2, AD4, AD5, and AD7 removed, AD8 loading is reduced to 0.70 which is not reliable. With this result, it can be concluded that the indicator reliability rule is fulfilled.

5.3 Convergent Validity

Convergent validity rule is fulfilled. The result show that all latent variables' average variance extracted is higher than 0.50 which can be concluded as valid. According to Heir et al. (2011), the average variance extracted (AVE) should be higher than 0.50 [20].

5.4 Discriminant Validity

The researcher test the discriminant validity by observing the cross loading factor of each indicator. The result shows that all indicators' loading is higher than all of its cross loading. According to Heir et al. (2011), an indicator's loadings should be higher than all of its cross loadings [20]. With this result, it can be concluded that the discriminant validity is fulfilled. Besides of observing cross loading, the researcher also evaluated the discriminant validity by observing the Fornell-Larcker criterion and compared it with average variance extracted. The result shows that every latent variable's average variance extracted (AVE) is higher than its squared highest correlation with others latent variable. According to Heir et al. (2011), the AVE of each latent construct should higher than the construct's highest squared correlation with any other latent construct (Fornell-Larcker criterion) [20]. It means that all variables are valid. As Heterotrait-Monotrait Ratio of Correlations (HTMT) criterion is included to evaluate discriminant validity, the researcher also observes the HTMT. The result shows that every HTMT values are below 0.85. According to Henseler et al. (2015), as HTMT_{.85} is used, it means the HTMT result should below 0.85 to fulfil the discriminant validity [21]. It means that the discriminant validity has been established.

5.5 Internal Consistency Reliability

Internal Consistency rule is fulfilled. The researcher tested the is internal consistency reliability test. The researcher test it by observing the composite reliability. The result shows that all of the latent variable's composite reliability is higher than 0.70 which can be concluded as reliable. According to Heir et al. (2011), composite reliability should be higher than 0.70 [20].

5.6 R Square

The researcher evaluated the R square which will show whether the model is substantial, moderate, or weak. Table 2 below shows the R square result.

Table 2: R Square Result

Endogenous Variable	R ²
Adoption (AD)	0.42
Behavioral Intention (BI)	0.48
Performance Expectancy (EE)	0.34

Table 2 shows that R Square of adoption, behavioral intention, and performance expectancy is less than 0.50. According to Heir et al. (2011), R square values of 0.75, 0.50, or 0.25 for endogenous latent variables in the structural model can be described as substantial, moderate, or weak, respectively. It means that model is weak [20]. Adoption is 42% influenced by behavioral intention and facilitating condition while 58% is influenced by variable outside the research. Behavioral intention is 48% influenced by performance expectancy, effort expectancy, social influence, hedonic motivation, price value, and trust while 52% is influenced by variable outside the research. Performance expectancy is 34% influenced by effort expectancy and trust while 66% is influenced by variable outside the research.

5.7 Goodness of Fit (GoF)

The researcher evaluated the global goodness of fit (GoF). The researcher use the formula as based on Lee and Chen (2013) [22]. Table 3 below shows the goodness of fit (GoF).

Table 3: Global Goodness of Fit (GoF) Result

AVE	R ²	$GoF = \sqrt{AVE \times R^2}$
0.79	0.41	0.57

As shown in table 3, the value of global goodness of fit lies in 0.57. According to Isradila (2017), GoF value of 0.1, 0.25, and 0.36 indicates small GoF, moderate GoF, and large GoF, respectively [23]. It means that the global goodness of fit is large and the overall model is validated.

5.8 Predictive Relevance

The researcher evaluated the predictive relevance by observing the Q square. Table 4 below shows the Q square result.

Table 4: Q Square Result

Endogenous Variable	Q ²	Predictive Relevance
Adoption (AD)	0.31	Yes
Behavioral Intention (BI)	0.37	Yes
Performance Expectancy (PE)	0.24	Yes

Table 4 shows that Q square of the adoption, behavioral intention, and effort expectancy are higher than zero. According to Heir et al. (2011), resulting Q² values of larger than zero indicate that the exogenous constructs have predictive relevance for the endogenous construct under consideration [20]. It means that the model has predictive relevance.

5.9 Path Coefficient

The researcher evaluated the path coefficient which will show whether the structural path has positive influence or negative influence. Table 5 below shows the path coefficient result.

Table 5: Path Coefficient Result

Structural Path	Coefficient
Behavioral Intention -> Adoption	0.38
Effort Expectancy -> Behavioral Intention	-0.03
Effort Expectancy -> Performance Expectancy	0.47
Facilitating Conditions -> Adoption	0.36
Hedonic Motivation -> Behavioral Intention	0.11
Performance Expectancy -> Behavioral Intention	0.15
Price Value -> Behavioral Intention	0.16
Social Influence -> Behavioral Intention	0.14
Trust -> Behavioral Intention	0.34
Trust -> Performance Expectancy	0.17

As shown in table 4, all paths' coefficient resulted positive value except effort expectancy towards behavioral intention path. It means performance expectancy, social influence, facilitating conditions, hedonic motivation, price value, and trust have positive influence to behavioral intention while effort expectancy has negative influence toward behavioral intention. Trust and effort expectancy have positive influence toward performance expectancy. Behavioral intention has positive influence towards adoption.

6. Discussion

Based on the result presented above, the model being examined in this research has been able to be a predictive model in predicting the adoption of mobile banking. Although the resulted R square indicates the endogenous variables is weak in explaining its exogenous variable (i.e. performance expectancy, behavioral intention, adoption), but resulted global goodness of fit indicates the overall model is adequately explains the adoption of mobile banking in Indonesia. This is also supported by the attainment of construct validity, reliability, and predictive relevance. This finding also has been proven by Alalwan et al., 2017 which used the same model [10].

Moving to the path coefficient analysis, trust was found to be the most positive factor predicting behavioral intention of the potential customers with coefficient value of 0.36 and t-value of 4.69. Those values are the highest compared to the others behavioral intention predictors. This indicates that Indonesian customers are more motivated to use mobile banking if they know that mobile banking is trusted. The influence may be caused by the nature of electronic banking services that are characterized with the high uncertainty coupled with the nature of financial which could be characterized as high risky product (Hanafizadeh et al., 2014) [24].

In addition, trust also have significant positive influence to performance expectancy which means Indonesian customers' will assume mobile banking is useful if they trust mobile banking. Likewise, Alalwan et al. (2017) stated that trust also shaping Jordanian customers' perception toward mobile banking as more productive technology [10].

The statistical result also provides strong proofs confirming the causal path between performance expectancy and behavioural intention with coefficient value of 0.15. This signifies that more perceived benefit of mobile banking they know, the more they will be motivated to use it. This finding

has also supported by Hanafizadeh et al. (2014) in Iran and Wessels and Drennan (2010) in Australia found that customers seem to be more motivated to use mobile banking if they recognized mobile banking as being useful in their daily life [24, 25].

The empirical results had not supported the direct positive influence of effort expectancy toward behavioral intention with coefficient value of -0.03. This implies that the ease of using mobile banking will not increase the motivation of Indonesian customers' to use mobile banking. In line with Arenas-Gaitan et al. (2015), it is mentioned that there is no significant relation between effort expectancy to behavioral intention in the area of mobile banking [26].

In the other hand, the indirect influence of effort expectancy via performance expectancy has positive influence towards behavioral intention with coefficient value of 0.47. In the other words, if Indonesian customers know that using mobile banking needs less effort and easy, they will feel more that mobile banking is useful in their life. Also, Eriksson et al. (2005) and Riffai et al., (2012) stated that individuals' perception of the system usefulness is strongly influenced by the extent of how much such system is ease to use and does not require too much efforts [27, 28].

As for the role of social influence, the results have been supported the positive influence of social influence towards behavioral intention with coefficient value of 0.14. This means that Indonesia customers consider the recommendations of their reference groups (i.e. family, friends, colleagues) in formulating their intention to use mobile banking. The more recommendations they get will motivate them more to use mobile banking. Yu (2012) and Zhou et al. (2010) supported the positive influence of social influence towards behavioral intention. [29, 12].

Facilitating conditions was found to be positive factor in predicting the adoption of mobile banking with coefficient value of 0.36. This signifies that respondents will adopt mobile banking if they have the skills, facilities, and resources required to use mobile banking. This seems happened because the facilities that are required in the case of Mobile banking (i.e. smartphone, 4G services, internet access, secured applications) are fundamental aspects to have a smooth and easy access to the financial services (Alalwan et al., 2017) [10]. Statistical results show that hedonic motivation was proven to be positive predictor of behavioral intention with coefficient value of 0.11. This indicates that Indonesian customers' intention to use mobile banking will increase if they know that use mobile banking is entertaining and able to brings a joy and entertaining. In line with Alalwan et al. (2017), adoption of mobile banking could reach the highest level among the customers who perceive further joy in using mobile banking [10].

The empirical results have supported that price value had positive influence towards behavioral intention with coefficient value of 0.16. This means Indonesian customers consider worthy of the cost they spend in determining their motivation to use mobile banking. If they know that the cost of using mobile banking is proportional to its perceived benefit, they will more motivated to use mobile banking.

According to Yu (2012) and Hanafizadeh et al. (2014), customers are less likely to accept Mobile banking if they perceive a higher monetary cost in comparison with other traditional channels [29, 24].

The last finding confirmed that behavioral intention has positive influence towards adoption mobile banking with coefficient value of 0.38. This implies that Indonesian customers' willingness to use mobile banking will affect the adoption of mobile banking itself. The higher willingness to use mobile banking will increase the adoption of mobile banking services. This is supported by Venkatesh et al. (2012) which has been proven that behavioral intention has been largely reported to have strong role in shaping the adoption of mobile banking [9].

7. Conclusion

Based on the analysis result and discussion of this research, the researcher obtained several conclusions which adoption is 42% influenced by behavioral intention and facilitating condition. Behavioral intention is 48% is influenced by performance expectancy, effort expectancy, social influence, hedonic motivation, price value, and trust. Performance expectancy is influenced 34% by effort expectancy and trust. Performance expectancy, social influence, hedonic motivation, price value, and trust has positive influence to behavioral intention while effort expectancy has no positive influence to behavioral intention. Effort expectancy and trust have positive influence to performance expectancy. Behavioral intention has positive influence to adoption.

From the result, the companies suggested to do socialization about mobile banking so that non-mobile banking user could know that mobile banking is useful for their life, easy to use, trusted banking channel, and what kind of resources they need to use mobile banking. Other than that, free mobile data in using mobile banking could be achieved by do cooperation with mobile data provider. Besides, allowing them to try mobile banking in trial mode is also suggested which is it will lead them to have positive experience. The companies also suggested to provide reward for the new users, enhance the interface design, and keep maintain good image of mobile banking to the existing users.

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