Analysis of Mobile Banking (M-Banking) Success Using a Respecification of Delone & Mclean Information Success Model (Case Study at Permata Bank, Surakarta, Indonesia)

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Abstract. The main objective of this study is to analyze factors that affect the success of mobile banking in Permata Bank Surakarta, Indonesia by using the Delone & McLean Information Success Model.

Type of data is primary data. Data were taken from the questionnaires distributed to customers of Permata Bank in the city of Surakarta who use mobile banking services. The sampling method is purposive sampling, so that samples obtained with 200 respondents, 60.5\% of respondents were men and 39.5\% of respondents were women. Data were analyzed using Structural Equation Modelling (SEM) through 18 versions of AMOS. Goodness of fit after the modification of the proposed model showed good results, among others, Chi-Square 0.908, TLI for .988, CFI of .991, and RMSEA of .022.

The results of this study indicate that: (1) System Quality variable has no influence toward Use, (2) Information Quality variable has influence toward Use, (3) System Quality variable has influence toward Satisfaction, (4) Information Quality variable has influence toward User Satisfaction, (5) User Satisfaction variable has no influence toward Use, (6) Net Benefit variable has no influence toward Use, (7) Use variable has no influence toward Net Benefit, (8) User Satisfaction variable has influence toward Net Benefit, and (9) Net Benefit variable has no influence toward User Satisfaction.

Keywords: Mobile Banking, D&M IS Success Model, System Quality, Information Quality, Use, User Satisfaction, Net Benefit.

1. Introduction

The banking sectors around the world are trying to give the best services to their customers. They make some innovation and development. They want to give easier way and usefulness for their “mobile” customers. They develop services that integrate information system, especially using technology. Some technologies that the banking sector offers are sms-banking, internet banking, ATM, etc. We called it mobile banking. The customer must not go to the bank office to do their transaction. This service is very useful for the customers, that they have enough time to go to the bank office because of their own activity.

This mobile banking service is available for all its customer. The bank charges the fee for their customer for it. It is not the option for the customer to choose. But, not all the customers have a willing to accept and use that service. So, the banking sector must know how about the successful of the mobile banking services.

In Section 2, we discuss the study’s background and develop our research questions. Section 3 discusses the sample selection and research method. The results are discussed in Sections 4 and Section 5 concludes.

2. Background and Research Question

2.1. Prior Research

Some researchers investigate the successful of the technology information systems. DeLone and McLean developed IS Model at 1992, using six constructs, they are system quality, information quality, user satisfaction, usage, individual impact and organizational impact. But until 2002, there are so many additional...
new construct, they are service quality and willingness to use, and combining individual impact and organizational impact to net benefit.

Wu and Wang (2006) respecified this model to analyse Knowledge Management System (KMS). After many years, Seddon (1997) do some researches and found that there are some additional construct to D&MIS Model.

2.2. Research Questions
The main objective of this research is what factors that affect the successful of mobile banking service, especially of Bank Permata, Solo, Indonesia. We can describe this research question for our hypothesis.

- H1: System quality affect positively to the use of mobile banking
- H2: Information quality affect positively to the use of mobile banking
- H3: System quality affect positively to user satisfaction
- H4: Information quality affect positively to user satisfaction
- H5: User satisfaction affect positively to the use of mobile banking
- H6: Net benefits affect positively to the use of mobile banking
- H7: Use of mobile banking affect positively to net benefit
- H8: User satisfaction affect positively to net benefit
- H9: Net benefit affect positively to user satisfaction

The model that used in this research in Fig. 1.

![Fig. 1: mobile banking service of Bank Permata, Solo, Indonesia.](image)

3. Sample selection and Research Method

3.1. Sample Selection
The population of this research is banking customers. We used purposive sampling, with criteria: 1). customers of Permata Bank, Solo and 2). Those customers use mobile banking. We distribute 200 questionnaires directly to the customers, and all of the questionnaires can be used to this analysis. So, the sample of this research is 200.

3.2. Research Method
We used some method to analyse this research. To make sure that the instrument is valid and reliable, we used validity test and reliability test. To test the validity, we used Confirmatory Analysis Factor (CFA) with maximum Likelihood approach (Fornell and Larck, 1981). To test the reliability, we used Cronbach’s Alpha (Ghozali, 2005).

To test the hypothesis, we used Structural Equation Model (SEM) by using AMOS Software. The model for the regression is described below:

- \( NB = \alpha_1 + \beta U + \beta 2US + e1 \)
- \( U = \alpha_2 + \beta 3IQ + \beta 4SQ + \beta 5 US + e2 \)
3.3. System Quality

System quality is used to measure the quality of information technology system (Jogiyanto, 2007). The indicators used to measure this variable are ease-of-use, preferences, security and response time (Molla & Licker, 2001), and Palmer (2002).

3.4. User Satisfaction

Seddon and Kiew (1994) said that user satisfaction is the pure like and dislike feeling result from using something. The indicators used to measure this variable are needs, efficiency, effectiveness and enjoyment.

3.5. Information Quality

Information quality related to accuracy, timeliness, and relevancy (Seddon, 1997). Quality has a subjective nature. This variable used five indicators, they are relevance, accuracy, information diversity and completeness (Palmer, 2002 and Swass, 1996)

3.6. Use

The indicator to measure this variable is frequency of using (Young and Benamati, 2000).

3.7. Net Benefit

Net benefit is the comprehensive measure of total benefit minus all the cost to get the benefit (Seddon, 1997). The indicators are efficiency, performance quality and knowledge development (Wu and Wang, 2006)

4. Result

4.1. Descriptive Statistics

The sample we used in this research is 200. Based on the age, we can describe the classification Table 1 below.

<table>
<thead>
<tr>
<th>AGE</th>
<th>AMOUNT</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-20</td>
<td>0</td>
<td>0,00</td>
</tr>
<tr>
<td>21-25</td>
<td>39</td>
<td>19,50</td>
</tr>
<tr>
<td>26-30</td>
<td>19</td>
<td>9,50</td>
</tr>
<tr>
<td>31-40</td>
<td>51</td>
<td>25,50</td>
</tr>
<tr>
<td>Above 40</td>
<td>91</td>
<td>45,50</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100,00</td>
</tr>
</tbody>
</table>

Based on the gender, we can describe in Table 2 below.

<table>
<thead>
<tr>
<th>GENDER</th>
<th>AMOUNT</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>121</td>
<td>60,50</td>
</tr>
<tr>
<td>Female</td>
<td>79</td>
<td>39,50</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100,00</td>
</tr>
</tbody>
</table>
Based on their job, the description is in Table 3 below.

<table>
<thead>
<tr>
<th>JOB</th>
<th>AMOUNT</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil employee</td>
<td>35</td>
<td>17.50</td>
</tr>
<tr>
<td>Private employee</td>
<td>70</td>
<td>35.00</td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>71</td>
<td>35.50</td>
</tr>
<tr>
<td>Student</td>
<td>24</td>
<td>12.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100.00</td>
</tr>
</tbody>
</table>

### 4.2. Hypotesis Testing

From the validity testing using CFA, we found that there is one parameter or questionnaire item must be eliminated because the loading factor ≤ 0.5. So, the question item for net benefit is 3 parameter.

From the reliability testing using Cronbach’s Alpha, we found that all the construct have a good indicator so the reliability is accepted, except for use construct because this construct have just one question.

Before we test the hypotesis, firstly we test the model assumption. We use normality testing, outliers testing and goodness of fit testing. All of this testing showed that all the assumption can be accepted, so we can go to the hypotesis testing using SEM.

From the SEM testing, the result can be described below.

<table>
<thead>
<tr>
<th>Item Pengukuran</th>
<th>Estimate</th>
<th>Hypotesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>user satisfaction &lt;--- system quality</td>
<td>0.018 (H3)</td>
<td></td>
</tr>
<tr>
<td>user satisfaction &lt;--- information quality</td>
<td>0.019 (H4)</td>
<td></td>
</tr>
<tr>
<td>Use &lt;--- system quality</td>
<td>0.167 (H1)</td>
<td></td>
</tr>
<tr>
<td>Use &lt;--- information quality</td>
<td>0.005 (H2)</td>
<td></td>
</tr>
<tr>
<td>net benefit &lt;--- user satisfaction</td>
<td>*** (H8)</td>
<td></td>
</tr>
<tr>
<td>user satisfaction &lt;--- net benefit</td>
<td>0.382 (H9)</td>
<td></td>
</tr>
<tr>
<td>Use &lt;--- net benefit</td>
<td>0.952 (H6)</td>
<td></td>
</tr>
<tr>
<td>net benefit &lt;--- Use</td>
<td>0.871 (H7)</td>
<td></td>
</tr>
<tr>
<td>Use &lt;--- user satisfaction</td>
<td>0.276 (H5)</td>
<td></td>
</tr>
</tbody>
</table>

From the standardized regression weight, we can conclude that hypotesis 2,3,4 and 8 can be accepted, but hypotesis 1,5, 6,7,9 is rejected.

### 4.3. Discussion

The first hypotesis cannot be accepted, it means that the system quality cannot affect the use of the mobile banking technology. It’s presumed that not all the customer "technology aware”. The second hypotesis can be accepted, it means that the information quality affect the user satisfaction. The third hypotesis is accepted, it means that good system quality can affect the user satisfaction. The fourth hypotesis can be accepted, it means that information quality can affect the user satisfaction. The fifth hypothesis cannot be accepted, it means that when customer have a satisfaction, it can not affect the use of them. The sixth hypotesis can not be accepted, it means that net benefit cannot affect the use of mobile banking. The seventh hypotesis cannot be accepted, it means that the use of mobile banking cannot affect the use of mobile banking. The eighth hypotesis can be accepted, it means that the user satisfaction can affect the net benefit of the technology. The last hypotesis is not accepted, it means that net benefit cannot affect the user satisfaction.

### 5. Conclusion
By using of respecification of DeLone and McLean model applied to the successfull of mobile banking technology at Permata bank, Surakarta, Indonesia, we can conclude that this model can not be applied well. From the SEM testing, we can conclude that system quality and information quality can affect user satisfaction, information quality can affect the usage of mobile banking and that user satisfaction can affect the net benefit of the customers.

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7. References