MEASURING QUALITY OF INFORMATION SYSTEM THROUGH DELONE MCLEAN MODEL IN ONLINE INFORMATION SYSTEM OF NEW STUDENT REGISTRATION (SISFO PPDB) Jamal Maulana Hudin1), Yusti Farlina2), Rizal Amegia Saputra3), A.Gunawan 4), Denny Pribadi 5), Dwiza Riana6) STMIK Nusa Mandiri Jakarta16), AMIK BSI Sukabumi 234), STMIK Nusamandiri Sukabumi5 jamal.jml@nusamandiri.ac.id1), rizal.rga@bsi.ac.id2) , denny.dpi@nusamandiri.ac.id3), dwiza@nusamandiri.ac.id4)
Abstract - Online Information System of New Learner Acceptance (SISFO PPDB) is an information system that is designed by the Government of the Republic Indonesia through City Education Office to conduct automation of New Learner Acceptance selection with the purpose to ease the New Learner Acceptance process.

The processes are conducted in an online and real time manner, starting from registration process, selection until announcement of selection results. This SISFO PPDB often faces problems such as difficulty in filling out for common people because of lack of socialization so that it is necessary for evaluation on SIFO PPDB quality. Delone Mclean Model is a model to measure the success level of an information system based on user perspective.

The model that is applied in this research aims to measure the SISFO PPDB quality level. There are 270 students as the research samples, namely Vocational High School (SMK) students in Sukabumi city. Results of this research based on R-Square indicate that user satisfaction variable affects by 97% and net benefit variable affects by 87% on online SISFO PPDB, then it can be concluded that online SISFO PDB quality has been quite good in Sukabumi city.

However, it is still necessary to improve its quality by socialization on the community so that the goals of SISFO PPDB application can be realized in a proper manner. Keyword: Information System, PPDB, Delone and McLean (SEM).

I. INTRODUCTION

Information system of new student registration (SISFO PPDB) enables students for online registration without visiting the institution physically and provides registration status and online acceptance application [1].

New learners must meet criteria that are determined by the school through enrolment stage, selection test and announcement of new learner acceptance [2]. The information system that is built aims to assists any new learners to determine their desired schools and serves as the benchmark in the new learner acceptance in new learner enrollment [3].

There are problems faced by Information system of new student registration (SISFO PPDB) namely lack of socialization of online PPDB system use to system users, so that system users face difficulty in the enrollment process [4]. There is also another problem by this SISFO PPDB namely access inability by public. In the first day in Bandung Regency, there was miss information, namely information stating that a student that conducted online registration to a State Senior High in Lembang was accepted in a State Senior High School in Cirebon.
There are also quite a lot of complaints namely at the system which often stated that the data input by the registrants were false [5]. There are complex problems by SISFO PPDB, ranging from system error, human error and others. It is necessary to observe the success level of SISFO PPDB, namely to determine the level of success of this SISFO PPDB according to user perception, which later can be used as consideration by related parties to improve this SISFO PPDB quality.

Delone-Mclean Model is the most used model to measure the success level of an Information System, by measuring the level of User Satisfaction [6]. Delone-Mclean Model is tested by distributing questionnaires to the users that have used SISFO PPDB. In this Delone-Mclean model, it is used system quality, information quality and service quality as the variables to test the effect of information system success.

Also, this research tests and analyzes the effects of information system success on net benefit [7]. This research aims to determine the level of user success of online New Learner Acceptance (OODB) by applying DeLone And McLean 2003 information system success model by using system quality, information quality, service quality and user satisfaction variables.

Measuring information system of Delon and Mclean Information Success Model reflects dependence at six elements of information system. The six measurement elements or factors of this model are (1) System Quality, (2) Information Quality, (3) Service Quality, (4) Use, (5) User Satisfaction, and (6) Net Benefit [8].

There are researches related to the implementation of Delone-Mclean model to measure the success level of an information system, such as research [9] determining any factors affecting on the quality of online SME marketing website, by using DeLone & McLean Model through questionnaires given to 103 students that have had experiences of online purchase.

In this research, it is found out that there are important factors in the quality of SME online marketing website, namely fast response time, information availability, and fast response on the service. There is also a research [6] using delone mclean model to measure the satisfaction level of accounting information system use that is proposed by accounting department students, results of the research indicate that quality of accounting information use greatly affects on the net benefit by the respondents.

There is also a research [10] using quality dimension of Delone-McLean Model to measure User Satisfaction in the context of information system security, results of the research indicate that information system has positive relations to user satisfaction;
system quality has negative relations to user satisfaction, and service quality has no relation to user satisfaction.

There is also a research [11] testing and analyzing on any variables affecting on the implementation of Information System of Company Resource Planning in PT. Telkom Indonesia Tbk. This research uses DeLone and McLean Information Systems Success Models (D & M IS Success Model), in this research, it is known that user satisfaction at information system of Enterprise Resources Planning (ERP) in this model can be described by quality system, information quality and service quality by 60,5% out of the biggest effects.

There is also a research [12] proposing on ex post evaluation by information system users that is dedicated to automotive industry (XPPS), based on success model of DeLone and McLean system; this data analysis with structural equation modeling technique confirms that information quality serves the role key in improving user satisfaction and intension to use the system.

There are many researches using delone-mclean model as the model to test the information system, in this research, it proposes to use the delone mclean model to test the success level of SISFO PPDB. The variables to be tested are (1) system quality, (2) information quality, (3) service quality, (4) User Satisfaction and (5) Net Benefit. II.

RESEARCH METHOD Information Systems Success Model There are six factors used namely quality information, system quality, service quality, intention to use, user satisfaction and net benefits from the updated Delon & Mclean (Fig 1). This model does not measure the six dimensions of success measurement independently, but it measures as a whole which one factor affects on the other. Fig 1.

Update of D & M Reformation Model[6] Model and Research Hypotheses The Delon & Mclean model in Fig 1 is further modeled for the research hypothesis. In this model, the model is modified according to the research needs. Variables used in this research are: information quality, system quality, service quality, user satisfaction, and net benefits.

Unused variables are use because SISFO PPDB is used only once by the users. In this research, the independent variables are quality information, system quality and service quality variables. While the dependent variables are output, criterion, consequent variables as the dependent ones that are affected or as the results of the independent variables.

In this study, the dependent variable is user satisfaction. Fig 2. Research Hypotheses
Model Fig 2 practically illustrates the inter-variable effects in the Delon and Mclean success model in this study, which will be tested on the SISFO PPDB application.

Based on the concept framework of inter-variable effects, the hypotheses are compiled as follows: H1: it is assumed that there are significant effects of Information Quality (IQ) on User Satisfaction (US) H2: it is assumed that there are significant effects of System Quality (SQ) on User Satisfaction (US) H3: it is assumed that there are significant effects of Service Quality (SQ) on User Satisfaction (US) H4: it is assumed that there are significant effects of User Satisfaction (US) on Net Benefit (NB) The type of research conducted in this study is quantitative research; the research technique conducted in this study is descriptive research technique.

In this research, there are 1200 people as the research population consisting of Vocational High School (SMK) students in Sukabumi. The samples or respondents in this research were taken from the Vocational High School (SMK) students in Sukabumi; there are 270 samples to fill in the questionnaires. The samples were taken based on the provisions of the theory developed by Isaac and Michael with a 5% error rate.

The sample collection technique is conducted by Simple Random Sampling namely by taking the sample members from the population randomly without regarding to the strata in the population. In this study, it used questionnaire instrument made by means of Likert Scale with Checklist form to facilitate the respondents in answering the questionnaires.

Data taken from the questionnaire can be quickly analyzed with statistics. TABLE I

<table>
<thead>
<tr>
<th>RESEARCH VARIABLE AND INDICATORS</th>
<th>Variables</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Quality (IQ)</td>
<td>X1= Time punctuality</td>
<td>X2= Briefness</td>
</tr>
<tr>
<td>System Quality (SQ)</td>
<td>X6= system availability</td>
<td>X7= Fast response</td>
</tr>
<tr>
<td>Service Quality (ServQ)</td>
<td>X11= system reliability</td>
<td>X12= system consistency</td>
</tr>
<tr>
<td>User Satisfaction (US)</td>
<td>Y1= assessment on system use satisfaction</td>
<td>Y2= difficulty in system use</td>
</tr>
<tr>
<td>Net Benefit (NB)</td>
<td>Y6= growing creativity</td>
<td>Y7= improved knowledge</td>
</tr>
</tbody>
</table>

The model was analyzed by structural equation modeling based on popular components or variants (component bases) with Partial Least Square (PLS) [13].

PLS is a variance-based model of structural equation model that can describe latent
variables (indirectly measurable) and measured using indicators (manifest variables) [3]. Factors and dimensions to be examined from the theoretical model are given in Table I. III. RESULTS A. Analysis of Structural Equation Model (SEM) 1. Measurement Model (outer) Convergent validity There will be loading value with high validity level if it has each factor value more than 0.50 [14].

If it is less than 0.50 then the indicator is invalid, so that it must be eliminated. [15]. TABLE II OUTER LOADING VALUES Indicators _Loading _Loading Target _Notes _ _ _ _ _ _ _X2 _0,943226 _=0,5 _Valid _ _X3 _0,931136 _=0,5 _Valid _ _X4 _0,410898 _=0,5 _Invalid _ _X5 _0,416317 _=0,5 _Invalid _ _X6 _0,601855 _=0,5 _Valid _ _X7 _0,866841 _=0,5 _Valid _ _X8 _0,806145 _=0,5 _Valid _ _X9 _0,723074 _=0,5 _Valid _ _X10 _0,228882 _=0,5 _Invalid _ _X11 _0,318954 _=0,5 _Invalid _ _X12 _0,416173 _=0,5 _Invalid _ _X13 _0,625543 _=0,5 _Valid _ _X14 _0,917936 _=0,5 _Valid _ _X15 _0,469262 _=0,5 _Invalid _ _Y1 _0,794235 _=0,5 _Valid _ _Y2 _0,651926 _=0,5 _valid _ _Y3 _0,923081 _=0,5 _valid _ _Y4 _0,947325 _=0,5 _valid _ _Y5 _0,708858 _=0,5 _valid _ _Y6 _0,741519 _=0,5 _valid _ _Y7 _0,818948 _=0,5 _valid _ _Y8 _0,728706 _=0,5 _valid _ _Y9 _0,939617 _=0,5 _valid _ _Y10 _0,898818 _=0,5 _valid _ _Y11 _0,367726 _=0,5 _Invalid _ Source: Processed Primary Data (2018) Table II shows the outer loading results for each indicator owned by each exogenous and endogenous latent variable. From table II, it can be known the invalid indicators, so that these must be eliminated since they are insignificant.

The indicators are X4 (actuality), X5 (Relevance), X10 (integration completeness), X11 (system reliability), X12 (system consistency), X15 (Empathy), Y11 (shared knowledge achievement). From Fig 3, it can be seen that the research structure using SmartPLS 2.0, can be seen the results from the calculation of > PLS Algorithm. After the first calculation, then the invalid variables must be eliminated.

After elimination, there is PLS algorithm calculation again to know AVE (Average Variance Extracted). 2. Discriminant validity AVE (Average Variance Extracted) is discriminator validity measurement, then the outer results of the mean can be seen in Table IV. The indicators are stated to be valid by discriminators, if the AVE > 0.50 [15].

TABLE III AVE VALUES Indicator _AVE _Indicator Target _Notes _ _IQ _0,808304 _=0,5 _Valid _ _SQ _0,589755 _=0,5 _Valid _ _ServQ _0,647902 _=0,5 _Valid _ _US _0,661611 _=0,5 _Valid _ _NB _0,692995 _=0,5 _Valid _ From table III, it can be seen that after the elimination of invalid indicators, then it is obtained the valid AVEs, the next step in evaluating the outer model structure is to test whether the tested variables are reliable or not by looking at the composite reliability and cronbach alpha 3.
Composite Reliability & Cronbach Alpha The constructs are stated to be reliable if the composite reliability value or cronbach alpha value is more than 0.70 [16]. Table V is the output results of SmartPLS showing the Composite Reliability & Cronbach Alpha values:

<table>
<thead>
<tr>
<th>Composite Reliability</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ</td>
<td>0.876785</td>
</tr>
<tr>
<td>SQ</td>
<td>0.751996</td>
</tr>
<tr>
<td>ServQ</td>
<td>0.510634</td>
</tr>
<tr>
<td>US</td>
<td>0.865076</td>
</tr>
<tr>
<td>NB</td>
<td>0.888722</td>
</tr>
</tbody>
</table>

From table IV, it can be seen that all variables in this research are reliable.

All validity test results including Convergence Validity and Validation Validity (Cross Loading) and reliability test of composite reliability and Cronbach alpha parameters indicate that the indicator and construct variables used are valid and reliable so that it can be used in testing the structural model (inner model). B. Evaluation of Structural (Inner) Model 1. R² test The structural model (inner model) is a relationship pattern of the research variables.

Evaluation of the structural model is to see the inter-variable coefficients and determination coefficients (R²). The R² value approaches 1, with the criterion of value constraint is divided into 3 classifications namely 0.67 = substantial, 0.33 = moderate, and 0.19 = weak [6].

Table V describes the R-Square value of user satisfaction variable by 0.87 and the net benefit variable by 0.97, which means the user satisfaction of SISFO PPDB in this model can be explained by the system quality, the information quality and the service quality by 97%, while the net benefit of the SISFO PPDB application in this model can be explained by user satisfaction by 87%, based on the research R-Square value indicating that the model is in the substantial or strong category. 2.

Hypothesis testing The significance measure of the hypothesis support can be used T-table and T-statistic comparison [16]. If the T-statistic value is greater than T-table, then the hypothesis is supported. In the PLS rule of thumb for a 95 percent confidence level (alpha 5 percent), the T-table value for the two-tailed hypothesis is over 1.96 and for the one-tailed hypothesis is more than 1.64, in hypothesis testing for the regression model, degrees of freedom or df (degree of freedom) is determined by the nk formula which

\[ df = n - k \]

so that it can obtained the df = 174 – 6 = 168 value and a = 5%. Then the T-table value is 1.65
Table VI, the resulting t-statistic is greater than the limit value of 1.96 with a significant level of 5%.

It can be concluded that the information quality has positive effects on user satisfaction, the system quality has positive effects on user satisfaction, the service quality has positive effects on user satisfaction, and the user satisfaction has positive effects on the net benefits. IV. DISCUSSION TABLE VII HYPOTHESES RESULTS

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relation</th>
<th>df</th>
<th>T Statistics</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>KI (\rightarrow) KPG</td>
<td>1,96</td>
<td>5,99</td>
<td>Significant</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>KS (\rightarrow) KPG</td>
<td>1,96</td>
<td>5,97</td>
<td>Significant</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>KP (\rightarrow) KPG</td>
<td>1,96</td>
<td>6,32</td>
<td>Significant</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>KPG (\rightarrow) MB</td>
<td>1,96</td>
<td>85,53</td>
<td>Significant</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Based on results of variable statistic test as shown in table VII, the four hypotheses that have been formulated before, including inter construction variable and independent variable relations are supported and proven to have positive and significant effects on dependent variables.

Data in table VII, indicate that the 1st hypothesis confirms that the existing quality of online SISFO PPDB such as description of user manual, navigation structure and manual for beginners can affect significantly on user satisfaction. Then, the quality of SISFO PPDB system has positive effects on user satisfaction, it means that better system quality can lead to increased user satisfaction.

Then, service quality can also greatly affect significantly on user satisfaction (t-statistics: 6,32 > df: 19,96). Ultimately, user satisfaction of SISFO PPDB greatly affects on net benefit (t-statistics: 85,53 > df: 19,96); this can be seen in growing creativity, knowledge sharing and others. IV.

CONCLUSION The model in this research uses modification model of DeLone and McLean with the R-square value by 0,97 for the user satisfaction variable, meaning that SISFO PPDB user satisfaction in this model can be described by the system quality, information quality and service quality by 97%. Therefore, this model can be used to predict the user satisfaction in using SISFO PPDB using three aspects, namely information quality, system quality and service quality.

Meanwhile the net benefit has R-square by 0,97 meaning that the net benefit of the SISFO PPDB application, whether individual benefit or benefit for company users, can be described by user satisfaction variable by 97%. Hypotheses test confirms that information quality, system quality and service quality partially have positive and significant effects on user satisfaction.

User satisfaction has positive and significant effects on net benefits. Descriptive analysis
indicates that respondents as the SISFO PPDB users assess that the system quality, information quality and service quality are included in superior category. Descriptive analysis indicates that the respondents are the users are satisfied at the SISFO PPDB.


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