Evaluation Information System Success of the PPDB Information System in SMP Negeri 16 Samarinda using DeLone and McLean's Model

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Abstract—Information System Success Analysis is a structured process of objects, with certain tools, with the aim of knowing whether the information system is successful or not in its application and getting the desired results from the object of research. In this study the data collection methods to be used were questionnaires, interviews, and literature study which were the theoretical foundations to be used. The model to be used is DeLone and McLean with SMP Negeri 16 Samarinda as a case study. With this research using the DeLone and McLean models, it aims to find out how successful the New Student Admissions (PPDB) information system is from the user's point of view, where the users are prospective students and the PPDB committee and whether the PPDB Online information system is very useful or not.

Keywords—Analysis, Success, Information System, PPDB Online, City of Samarinda, Using DeLone and McLean Models.

I. INTRODUCTION

Website of the New Student Admissions (PPDB) Online is used as an information system designed by the Ministry of Education and Culture to select new student admissions for public schools in various provinces in Indonesia. SMP Negeri 16 Samarinda is one of the public schools in the province of East Kalimantan which uses the PPDB website as a medium for registering new students.

Acceptance of new students is usually done manually by filling out the registration form and completing the requirements by parents and prospective new students, and they also have to come to school in person. In this way, the organizers of admitting new prospective students also experience difficulties, other difficulties also occur when they are going to do itselection sorting value of prospective students manually. This method means making it longer and slower to be completed.

With this description of the problem, the web-based PPDB is used as a service base and continues to be improved, so that it is hoped that it will provide convenience for students and parents to the public in registering, of course it will also make it easier for organizers or admissions officers for prospective new students. PPDB system*on line*This is designed in such a way with the aim of making it easy for prospective students to enroll. By using the online PPDB website, it makes it easy to find information regarding the implementation of the selection of new student admissions and registering through devices connected to the internet (Kurniawan, 2012).

a qualitywebsite can affect user satisfaction in using the website. The DeLone and McLean models are the right models in measuring the quality of a website (Adiyan, 2015). The DeLone and McLean models have been tested for validity and quickly received responses from researchers because the model developed is quite simple and is considered quite valid for all types of information systems, this model has six measures of success, namely system quality, information quality, service quality, use, user satisfaction, and net benefits (Saputro, 2015).

Based on the description of the background, it can be concluded that this study discusses the effect of quality*website*in its use as a new student admissions website and the influence of website quality in providing information to users regarding the process of admitting new students.

II. LITERATURE REVIEWS

A. Data

The word data comes from DATUM which means material or a collection of facts used for the purposes of an analysis, discussion, scientific presentation, or statistical test. When viewed according to the origin of the source, the data is divided into 2 groups, namely primary data and secondary data. So that every research definitely requires data as material for analysis. According to Siregar (2013), data is raw material that needs to be processed so as to produce information or information, both qualitative and quantitative that shows facts. According to Indrajani (2014), data are raw facts or observations which are usually about physical phenomena or business transactions, in data there is an

objective measure of the attributes (characteristics) of an entity, data can also be interpreted as a representation of facts that represent an object, such as customers, employees , students, and others,(Joseph, 2014).

B. Analysis

According to Sugiyono (2014), analysis in general is an ability to solve or describe a material or information into smaller components so that it is easier to understand. Analysis requires creative power and high intellectual abilities. There is no specific way that can be followed to conduct an analysis, so that each researcher must find his own method that he feels is suitable for the nature of his research. The same material can be classified differently by different researchers (Arikunto, 2010).

C. System Analysis

According to Mulyani (2016), system analysis in general is the elaboration of a complete information system into its various component parts with the intention that we can evaluate various kinds of problems that arise in the system. System analysis is a research technique for a system by describing the components of the system with the aim of studying the components themselves, as well as their relationship with other components that make up the system so that a decision or conclusion can be obtained regarding the system, whether it is the weakness or strengths of the system (Arief , 2014).

D. Online PPDB Information System

According to Isa (2012), information systems consist of humans, machines and methods of a company to carry out an operational activity of the company concerned with data to produce information. Information systems may involve, for example, computers along with storage media machines, office machines (fax machines, copiers), communication equipment (controllers, modems, routers and others), data storage media and others (Ridwan, 2013).

Whereas PPDB online is a service system designed to facilitate the automation of the implementation of New Student Admissions (PPDB), from the registration process, selection, to the announcement of real-time-based selection results via the internet (William and Ephraim, 2016).

From the opinion above, it can be concluded that the online PPDB information system is an integrated system for processing data about the acceptance of new students.

III. RESEARCH METHODS

A. Information Systems Success Model

In 1992, DeLone and McLean conducted a study which aimed to find out the aspects that influence the success of information systems.(Sutabri, 2012). The DeLone and McLean model explains that the measurement of information system success is categorized into 6 broad categories, namely system quality, information quality, use, user satisfaction, individual impact, and organizational impact. DeLone

and McLean's success model (Dewi, 2019)can be seen in Picture 1.
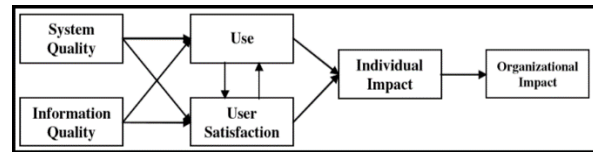
Picture 1. Model IS Success DeLone and McLean in 1992

DeLone and McLean refined their IS Success model. The improvements made by DeLone and McLean are as follows.

1. Adding service quality variables (Service Quality).
2. Combining individual impact variables and organizational impacts into net benefits (Net Benefits).
3. Adding aspects of the desire to use (Intention To Use) on the use variable (Use) to measure user behavior.
4. Adding feedback from the variable net benefits (Net Benefits) to the variable use (Use) and user satisfaction (User Satisfaction).

In model refinementDeLone and McLean can be seen in Picture 2.
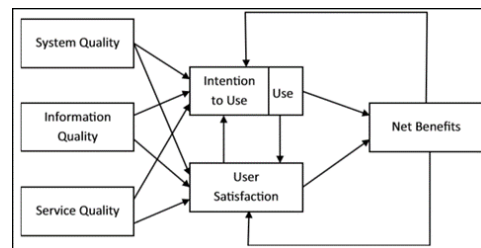
Picture 2. Improvements to the DeLone and McLean models

IV. RESULTS AND DISCUSSION

A. Respondent Data

Before distributing the questionnaires to the respondents, the researcher first calculated how many samples would be taken later from the existing population, while the total population (Gunawan, 2018) can be seen in Table 1.

Table1. Total Population

No	Respondents	Total Population
1	Student	189
2	PPDB committee	31
3	Parents of Students	189
	Total Population	409

B. Research Instruments

The instruments used in this study are based on the theory of successful information systems according to DeLone and McLean. There are 5 statements of 5 indicators for system quality, which can be seen in Table 2.

Table2. Instrument for system quality

Variable	Indicator	No	Statement
System Quality (KS)	Ease of use	KS1.	The display design of the PPBD Online information system makes it easy to use
	Access speed	KS2.	The PPDB Online information system can be accessed quickly
	system reliability	KS3.	There is no damage to the PPDB Online information system
	The use of specific functions	KS4.	The features run properly and can be opened via a smartphone
	Response time	KS5.	PPBD Online information system response time is fast

The instrument for the quality of advanced information is 1 statement of 1 indicator, which can be seen in Table 3.

Table3. Instruments for the quality of information

Variable	Indicator	No	Statement
Information Quality (KI)	accuracy	KI1.	The PPDB Online information system provides accurate and correct information

There are 5 statements of 4 indicators for the quality of advanced information, which can be seen in Table 4.

Table4. Instruments for advanced information quality

Variable	Indicator	No	Statement
	Completeness	KI2.	The PPDB Online information system provides complete information
	punctuality	KI3.	The PPDB Online information system displays timely information
	Reliability	KI4.	The resulting information is easy to read and understand
	Relevant	KI5.	The PPDB Online information system provides relevant and new information

The instrument for the service quality variable contains 5 statements of 3 indicators, which can be seen in Table 5.

Table5. Instruments for service quality

| Variable	Indicator	No	Statement
Service quality (KP)	Response speed and accuracy	KP1.	Admin provides a fast response to user requests
		KP2.	Admin provides proper information on user requests
	Engineering ability	KP3.	The PPDB Online information system is managed by a professional admin
		KP4.	Admin works quickly and precisely
	After service	KP5.	The PPDB Online information system is useful as it should be

There are 5 statements for user satisfaction from 2 indicators, which can be seen in Table 6.

Table6. Instrument for user satisfaction

Variable	Indicator	No	Statement
User Satisfaction (KG)	Satisfaction with user information	KG1.	The PPDB Online information system generates the appropriate information at the will of the user
		KG2.	The PPDB Online information system produces correct information
	User satisfaction with the interface	KG3.	Display in the PPBD Online information system can meet user satisfaction
		KG4.	Display in the PPDB Online information system according to user needs
		KG5.	Display in the PPDB Online information system is easy for users to use

C. Resudial Normality Test

Following are the results of the residual normality test on the variables Information Quality, System Quality, Service Quality on User Satisfaction can be seen in Picture 3.
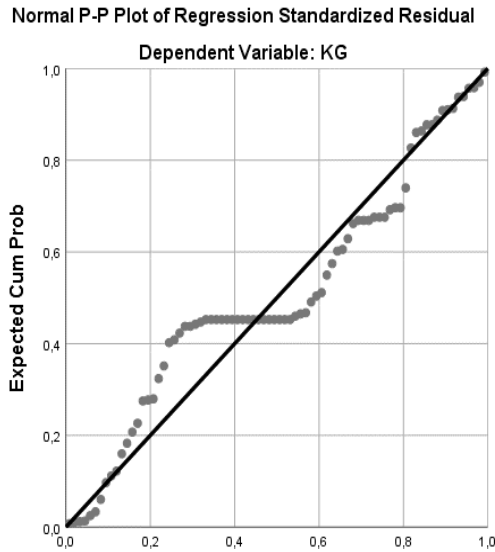
Picture 3. Residual Normality Test with Graphical Method

From the Picture 3, testthe residual normality of the variable information quality, system quality, service quality on user satisfaction can be seen in the output above, we can see that the plotting points contained in the PP Plot image always follow and approach the diagonal line, even though it has gone to the right and left of the line the diagonal, but at the end at the point x = 1.0 and y = 1.0 the points still follow the diagonal line. Therefore, as a guideline for decision making in the normality test, it can be concluded that the residual values are normally distributed. Thus, the assumption of normality for residual values in simple linear regression analysis in this study can be fulfilled (Muharto and Ambarita, 2016).

D. Hypothesis test

Testing the hypothesis in this study was carried out using a simple linear regression analysis technique. Simple linear regression analysis is used for only one independent variable (independent) and one dependent variable (independent). The data used for the simple linear regression test are interval scale data (Sudaryono, 2016). Calculation of manual hypothesis testing and assisted by using SPSS 25 software and using the value of t table in attachment 3.

E. System Quality on User Satisfaction

The constant a $=\frac{(\sum Y)(\sum X^2)-(\sum X)(\sum X.Y)}{N(\sum X^2)-(\sum X)^2} = \frac{(1676)(33651)-(1627)(34335)}{80(33651)-(2647129)} = 11,92$

Constant b $=\frac{N(\sum X.Y)-(\sum X)(\sum Y)}{N(\sum X^2)-(\sum X)^2} = \frac{80(34335)-(1627)(1678)}{80(33651)-(2647129)} = 0,44$

The simple linear regression equation, Y = a+bX = 11.92 + 0.44 X

Correlation value between X and Y variables, $r = \frac{N(\sum X.Y)-(\sum X)(\sum Y)}{\sqrt{(N(\sum X^2)-(\sum X)^2)(N(\sum Y^2)-(\sum Y)^2)}} = \frac{(80)(34335)-(1627)(1676)}{\sqrt{(80)(33651-(2647129)(80)(35556-(2808975))}} = 0,499$

The percentage of contribution of variable X to variable Y, KP $=r^2$ x 100% = 0.249 = 24.9%

T test, $t\ value = \frac{r\sqrt{n-2}}{\sqrt{1-(r)^2}} = \frac{0,449\ x\ 8,831}{0,866} = 5,09$

Determine the value of t table $=t_{(\alpha/2)(N-2)} = t_{(\frac{0.05}{2})(80-2)} = 1,992$

Hypothesis conclusion:
   Based on the Test Rules test
   1) t count > t table, where t count is 5.09, while t table is 1.992, so 5.09 > 1.992. Then there is an influence between system quality and user satisfaction.
   2) Make a hypothesis in the form of a sentence
       Ho: There is no influence between system quality and user satisfaction
       Ha : There is an influence between system quality and user satisfaction.
   3) The decision is that there is a significant influence between system quality and user satisfaction, and Ha is accepted.

The simple regression analysis test of system quality on user satisfaction can be seen in Table 7.

Table7. Simple Regression Analysis Test of System Quality on User Satisfaction

Model		Unstandardized Coefficients		standardized Coefficients		
		B	std. Error	Betas	1	Sig.
1	(Constant)	11,925	1,788		6,669	,000
	System Quality	,444	.087	,499	5,090	,000

F. Information Quality on User Satisfaction

The constant a $=\frac{(\sum Y)(\sum X^2)-(\sum X)(\sum X.Y)}{N(\sum X^2)-(\sum X)^2} =$

$\frac{(1676)(35488)-(1674)(35389)}{80(35488)-(2802276)} = 6,43$

Constant b $=\frac{N(\sum X.Y)-(\sum X)(\sum Y)}{N(\sum X^2)-(\sum X)^2} = \frac{80(35389)-(1674)(1676)}{80(35488)-(2802276)} = 0,694$

Simple linear regression equation, Y = a+bX = 6.438 + 0.694 X

Correlation value between X and Y variables, r =

$\frac{N(\sum X.Y)-(\sum X)(\sum Y)}{\sqrt{(N(\sum X^2)-(\sum X)^2)(N(\sum Y^2)-(\sum Y)^2)}} =$

$\frac{80(35389)-(1674)(1676)}{\sqrt{80(25488)-(2802276)(80(35556-2808976))}} = 0,706$

The percentage of contribution of variable X to variable Y,
KP $=r^2$ x100%
= 0.498 x 100% = 49.8%

T test, $t\ value = \frac{r\sqrt{n-2}}{\sqrt{1-(r)^2}} = \frac{0,706\ x\ 8,831}{0,707} = 8,79$

Determine the value of t table $=t_{(\alpha/2)(N-2)} = t_{\left(\frac{0.05}{2}\right)(80-2)} = 1,992$

Hypothesis conclusion:
   Based on the Test Rules test
1) t count > t table, where t count is 8.79, while t table is 1.992, so 8.79> 1.992. Then there is an influence between the quality of information and user satisfaction.
2) Make a hypothesis in the form of a sentence
   Ho: There is no influence between the quality of information and user satisfaction
   Ha : There is an influence between the quality of information and user satisfaction.
3) The decision is that there is a significant influence between the quality of information and user satisfaction, and Ha is accepted.
   Simple regression analysis test the quality of information on user satisfaction can be seen in Table 8.

Table8. Simple Regression Analysis Test of Information Quality on User Satisfaction

Model		Unstandardized Coefficients		standardized Coefficients			
		B	std. Error	Betas	1	Sig.	
1	(Constant)	6,438	1,660			3,878	,000
	Information Quality	,694	,079	,706		8,797	,000

G. Service Quality on User Satisfaction

The constant a $=\frac{(\sum Y)(\sum X^2)-(\sum X)(\sum X.Y)}{N(\sum X^2)-(\sum X)^2} =$

$\frac{(1676)(35439)-(1673)(35414)}{80(35439)-(2798929)} = 4,09$

Constant b $= 0.80\frac{N(\sum X.Y)-(\sum X)(\sum Y)}{N(\sum X^2)-(\sum X)^2} = \frac{80(35414)-(1673)(1676)}{80(35439)-(2798929)} =$

The simple linear regression equation, Y = a+bX = 4.09 + 0.80 X

Correlation value between variables X and Y,
r= $\frac{N(\sum X.Y)-(\sum X)(\sum Y)}{\sqrt{(N(\sum X^2)-(\sum X)^2)(N(\sum Y^2)-(\sum Y)^2)}} =$

$\frac{(80)(35414)-(1673)(1676)}{\sqrt{80(354339)-(2798929)(80(35556)-(2808976))}} = 0,814$

The percentage contribution of variable X to variable Y,
KP = x 100% = 0.662 x 100% = 66.2% r^2

T test, $t\ value = \frac{r\sqrt{n-2}}{\sqrt{1-(r)^2}} = \frac{0,814\sqrt{80-2}}{\sqrt{1-(0,814)^2}} = 12,36$

Determine the value of t table $=t_{(\alpha/2)(N-2)} = t_{\left(\frac{0.05}{2}\right)(80-2)} = 1,992$

Hypothesis conclusion:
   Based on the Test Rules test
1) t count > t table, where t count is 12.36, while t table is 1.992, so 12.36> 1.992. Then there is an influence between service quality and user satisfaction.
2) Make a hypothesis in the form of a sentence
   Ho: There is no influence between service quality and user satisfaction
   Ha: There is an influence between service quality and user satisfaction.
3) The conclusion is that there is a significant influence between service quality and user satisfaction, and Ha is accepted.
   Simple regression analysis test of service quality on user satisfaction can be seen in Table 9.

Table9. Simple Regression Analysis Test of Service Quality on User Satisfaction

Model		Unstandardized Coefficients B	std. Error	standardized Coefficients Betas	1	Sig.
1	(Constant)	4,093	1.372		2,984	,004
	Service quality	,806	.065	,814	12,368	,000

V. CONCLUSION

The test results with simple linear regression on the system quality variable on user satisfaction obtained t count = 5.090 > t table 1.992 so that it can be interpreted that there is an influence between system quality variables and user satisfaction. Gaugeson system quality such as ease of use, speed of access, system reliability, usability of specific functions, and response time have an influence on user satisfaction. The contribution made by system quality to user satisfaction is 24.9%.

The test results with simple linear regression on the variable quality of information on user satisfaction obtained the value of t count = 8.797 > t table 1.992 so that it can be interpreted that there is an influence between the variable quality of information and user satisfaction. The metrics on information quality are accuracy, completeness,timeliness, reliability, and relevance have an influence on user satisfaction. The contribution made by the quality of information on user satisfaction is 49.8%.

The test results with simple linear regression on the variable service quality on user satisfaction obtained t value = 12.368 > t table 1.992 so that it can be interpreted that there is an influence between service quality variables and user satisfaction. The yardsticks for quality of service are speed and accuracyresponse, technical ability, after service have an influence on user satisfaction. The contribution made by service quality to user satisfaction was 66.2%.

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