Effectiveness Analysis of Information System at Universitas Klabat

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Abstract

The Purpose of this research is to identify and measure the degree of effectiveness information system implementation at UniversitasKlabat, Airmadidi. The research was through several stages as follows: define research background and research objectives, collect the literatures to guide the research process, choose and form the model to measure the degree of effectiveness in information system, the suit research sample, and perform the data collection and analyzing the findings. The survey was conducted to sampling user of information system at UniversitasKlabat, the number of respondents was 80 persons divided by 71% lecturer and 29 % staff.Using the simple regression and multiple regression the research found that there are indication of 52.8% five dependent variables, namely: reliability, responsiveness, assurance, empathy, and tangible significant influence to the effectiveness of UniversitasKlabat information system (SIU). Furthermore, research was found that two variables, responsiveness and tangible has most significant influence with number 44.6% and 35.2% at the SIU compared with reliability, assurance, and empathy. Thus, it can be concluded that is the two variables has the greatest influence in determining effectiveness of SIU.

Keywords: *Information System, TQM, effectiveness of use information system.*

I. INTRODUCTION

Nowdays, information system play significant role in the organization process and development. To support and facilitate organization with information, the information system must integrate with the whole organization strategy. Users of information system may help organization having efficient in the decision process making supported by the effectiveness of the information system.(Turban, Sharda, &Delen, 2011). Therefore, the selection, design and implementation must be integral part in the strategic decision process in the organization. Moreover, because the increasing of competition, the organizations must be able to use and exploit the information system therefore the information system can give contribution for the organization's competitive advantages. Thus, the measurement and valuation of information system must be conducted by the organization. Several approaches have been developed such as Total Quality Management (Masrek, Bharati and Berg) and COBIT (IT Governance Institute) to inspect whether the information has been effectively implemented. The effective information system can provide useful and qualified information and application for users.University as an education organization faces a challenge whether they have to utilize information system as part of organization function. According to Shibanda (2002) the application of information system influence the core business of the university to manage the internal and external resources information to increase the quality of decision making process and provide services. Meanwhile, based on the research by the Shibanda (2002) at the Moi University proves that information system and technology is important factor to boost the university's performance and productivity.Universities are needed to implement change process and at the same time improve the performance. This is clear that information system can contribute to improve performance and daily operation. To facilitate the complexity of the UniversitasKlabat's activities thus UniversitasKlabat's information system that being used is already computerized. UniversitasKlabat's information system consists of three integrated parts:

1. Finance Information system that used SUN Accounting.
2. SistemInformasiUnklab (SIU), that consists of three parts: administration information system, academic results and registration, and general information.

3. Library information system that provide database and information resources for research, and new published book.
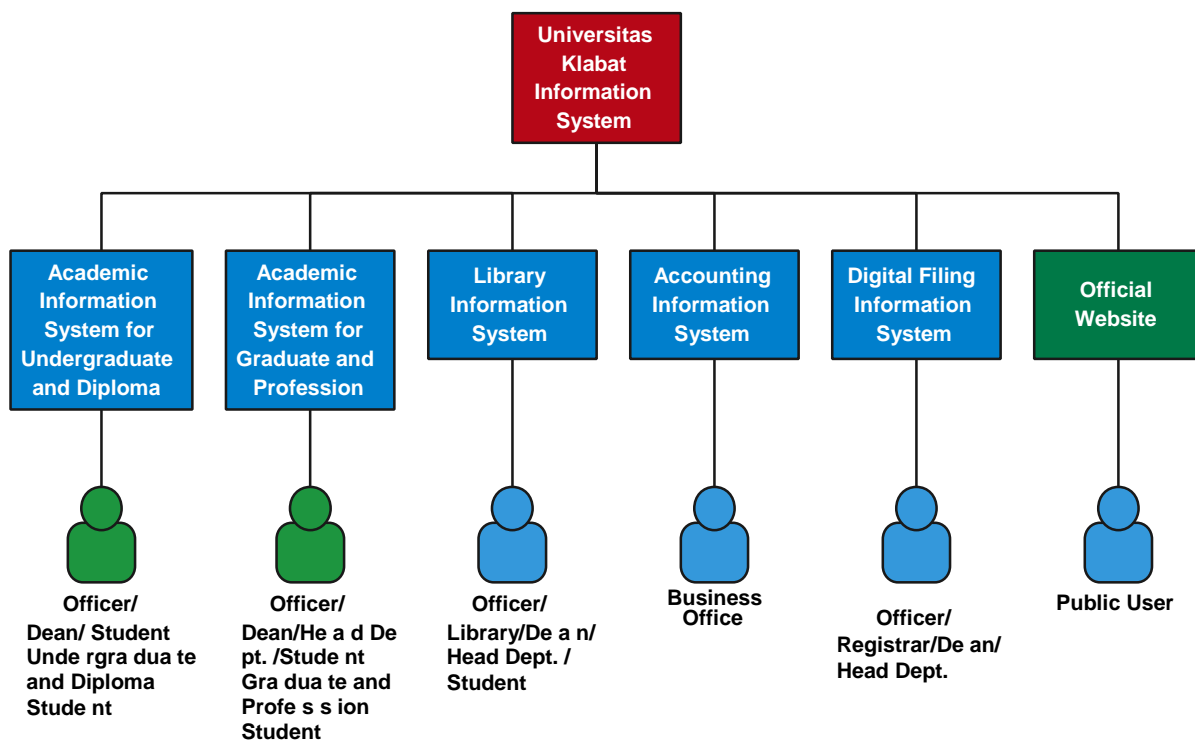

Figure 1: *University's information system(Source: Steven Lolong 2014)*

An information system that stressed on efficiency is not sufficient but also required to consider the effectiveness variables. Effectiveness means that by conducting the activities that have objectives to have maximum goals. As described by the chart below:

Figure 2: Efficiency (Robbins & Coulter,
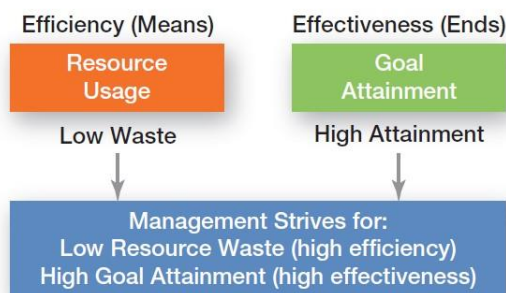
2014)

Measurement analysis of the effectiveness used in the business process has goal to monitoring and increase the whole business function and organization. Information system is part of the business process, thus it needs to measure the effectiveness implementation of information system at the organization (Sharma dan Bhagwat, 2006). The information system that able to create the users satisfaction with the effective services can be described as a successful information system. In line with Sharma dan Bhagwat, Gounaris and et all (2007) is explain that effectiveness of the information system must be supported with system's service quality.

Sayeda et all (2010) is explain that organization's effectiveness becomes benchmark or main process workflow in the organization and decision making process, therefore information system is part of infrastructure on the organization that can give the influence as the competitive advantage. This is the reason why measurement of information system is necessary to be conducted. Although, each organization has different characters and specific methods on interact with its internal and external environment but in general the main goal of the information system is to provide user's need and satisfy its need.

The TQM model used for this research is

adapted from DeLonedan McLean writing that explains the effectiveness of information system is measured by using components similar with Masrek point of view (2007) where the information system effectiveness supported by:

1. Individual impact
    Based on the information system concept where users factors of the information system become a valid aspect to measure the effectiveness of the information system. Because, the system is being used by the users then it is necessary to evaluate whether the information system is comply with the user's needs.
2. The effectiveness on using the information system
    According to Masrek (2007), degree of successfulness in effectiveness of users using information system must consider the environment, quality and precision. The using of the system must be able to evaluate all the function based on the objective being set. Thus, to measure to measure the effectiveness from the user's perspective must consider the experience of using information system. 3. Information system service quality

Quality explains about what customer's experience, if customers happy with the quality provided then the quality are good and if customers did not satisfy with the quality provided then the quality is bad. Therefore when measuring the information system must be evaluate from the quality of the system.

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This service quality is applicable for measuring information system effectiveness implementation and has direct correlation with the users. Users utilize technology or information system that may support their daily work activities, therefore the objective of information system is providing strong service quality as a step to succeed and effective organization's process. The model developed by DeLone and McLean is to measure the service quality consist of five components are reliability, responsiveness, assurance, empathy and tangible (Masrek 2007).

Table 1: *Information System Effectiveness Model*

Construct	Definition	Description and examples
Reliability	The ability to perform a promised service accurately	Using backup system can help ensure availability of the information system and minimize downtime. Reduced downtime and accurate data reflects excellent service
Responsiveness	A willingness to help users and to provide support services	Responsive Information System would mean quick response to each queries from users

Assurance	Knowledge, courtesy and ability to inspire trust and confidence	The security assurance precaution ensures trust and confidence. Prompt follow ups to user enquiries reflects Information System knowledge and courtesy
Empathy	The caring, individualized attention the intranet provides to users	Allowing Information System access to every internal users convey a sense of caring based on preferences and usage patterns convey a sense of individualized attention
Tangibles	The physical facilities, equipment and appearance of the information system	Visual pleasing page presentations and ease of site navigation. Since, Information System operates in a virtual environment, site and page characteristics have the most impact on tangible dimensions

The model being developed can predicted the using of information system to measure the effectiveness based on the research conducted by Masrek (2007).

II. METHODS

The methods in the research is descriptive methods with quantitative approach conducted at the UniversitasKlabat, Airmadidi, Minahasa Utara – Indonesia and the population of the research is all the staff at UniversitasKlabat that having direct correlation with the SIU. Sample being used for research is designed thus the sample will be representation of the population. It means sample being used have to represent the characteristic of the population for the whole research thus it can describe the real situation. Number of sampling being used as follow: n = N/(1 + Ne2) = 100/(1 + 100 x 0.052) = 80 N = Population size n = Number of sampling size

e = Acceptable number of deviation on sampling selection.

Analysis conducted to all data gained using the SPSS Statistic 22.0.0.0 Software program. This research is using the data collection by delivering questionnaire to the direct sampling respondents in the UniversitasKlabat. The questionnaire is consisting of questions that have purpose to gain respondent's response through the questions. The scale being used as indicators is Likert scale [there are several scale start with variable 1 (Strongly Agree), 2 (Agree), 3 (Neutral), 4 (Disagree), 5 (Strongly Disagree).

III. RESULT

Table 2: *Occupation*

Occupation	Using frequency	Percentage
Lecture	57	71%
Staff	23	29%

			empty

Sum.	80	100%

empathy, tangible against the Unklab information system.

Table 2 shows that number of respondents with occupation as lecturer are 57 persons or 71% from the total sampling while the number of respondents with occupation as staff is 23 persons or 29% from the total sampling.

Table 3:*Dependability description*

Dependability classification	Frequency	Percentage
Very Dependent	18	23%
Fairly Dependent	37	46%
Neutral	16	20%
Slightly Dependent	8	10%
Not Dependent	1	1%
Sum.	80	100%

Table 3 show that measurement of dependability classification against the SIU are
Very Dependent 18 persons or 23% from total sampling, Fairly Dependent 37 persons or 46%, Neutral 16 persons or 20%, Slightly Dependent 8 persons or 10% and Not Dependent 1 person or 1%.

I. Regression Multiple Analysis
This Analysis is has objective to understand the impact size of all dependent variables that is: reliability, responsiveness, assurance, and

Table 4:*Model summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.766^a	.587	.528	.50006

a. Predictors: (Constant), tangible, responsiveness, reliability, empathy, assurance

The test result on table show that the five dependent variables as follow: reliability, responsiveness, assurance, empathy, tangible been tested simultaneously against independent variable that is Unklab information system to measure on how much the analysis model conducted. Value of adjusted r2 is 0.528 or 52.8% described that simultaneously the five dependent variable can explain the SIU effectivity and the rest is 47.2% influenced by other factors that is not able to be explained on this research. According to Sugiyono (2010), the value of adjusted r2 is in the range of 3,1 to 0,50 that means the measuring is precise and sufficient enough to be proven. The value of r that gained from the test result is 76% that shows the degree of strongly relation among the dependent variables in predicting the SIU effectivity.

Table 5: *Anova*

Model	Sum of Square	df	Mean Square	F	Sig.
1 Regression	12.443	5	2.489	9.952	.000^b
Residual	8.752	35	.250		
Total	21.195	40			

a. Dependent Variable: siu
b. Predictors: (Constant), tangible, responsiveness, reliability, empathy, assurance

The significance test result simultaneously from table 5 using SPSS for Mac version 21, show that significance value is 0.00 meaning that < α 0.05 than Ho7 being refused. The result test giving the conclusion that dependent variable consists of: reliability, responsiveness, assurance, empathy, and tangible, simultaneously have a significant impact against the SIU. This result also supported by the previous result conducted by Masrek (2007) that reliability, responsiveness, assurance, empathy, and tangible factors have an impact to the effectivity of an information system.

Table 6: *Coefficients*

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.291	.275		1.058	.297
	reliability	.281	.177	.297	1.589	.121
	responsiveness	.432	.191	.446	2.267	.030
	assurance	-.048	.210	-.049	-.230	.819
	empathy	-.178	.177	-.202	-1.006	.321
	tangible	.299	.132	.352	2.259	.030

a. Dependent Variable: siu

From the 5 model analysis on the column model responsiveness has significance relation against (constant) shows that the result of X2, SIU, while X1, X3, X4, X5 did not have significance relation against the SIU. This result can be seen on the value of standardized Coefficients beta that X2 (responsiveness) is 44.6%, compared with X1 (reliability) given influence value 29.7%, while the X5 (tangible) is
35.2% against the SIU, meanwhile X3 (assurance) and X4 (empathy) given the different influence that is -4%, and -2% and this is described that if the variable assurance and empathy increasing then the SIU efficiencies is decline. According to Sugiyono (2010) this result is show that the degree relation can be neglecting on the result < 0.2 reliability. According to the coefficients table the regression equation can be explains as follows:
The SIU effectiveness = 0.291 + 0.281 (Reliability) + 0.432(Responsiveness) – 0.048(Assurance) – 0.178(Empathy) + 0.299(Tangibles) + error.

The conclusion is reliability, responsiveness, assurance, empathy, and tangible giving significance influence in the SIU efficiency, on the research conducted by Paridaet all (2004) explain that the difference between variables is because of the location and the different respondents selection. On this research the occupation of the respondent being choose is lecturer and staff at the UniversitasKlabat. This lecturer and staff have preference on responsiveness, where the need to overcome any issues or problems can be served by the speed, prompt response and easy to be contacted is part of the effectiveness of SIU.

IV. SUMMARY

The conclusion from this research result is that the SIU effectiveness can be influenced by 5 factors that are: reliability, responsiveness, assurance, empathy, and tangible. This is supported by the previous research performed by Masrek (2007) that the 5 factors giving influence in the information system
effectiveness. The other result in the research conducted by the Parida et all (2004) showing little difference because of the location and

respondent selection for the research is different. On this research the occupation of the respondents being chosen are lecturer and staff at UniversitasKlabat, Airmadidi thus the effectivity of the information system that are having significant relation to the factors such as: reliability, responsiveness, assurance, and empathy can be concluded by using respondents with occupation lecturer and staff.

From this research can be explained that 2 variables that giving most significance influence against the SIU are responsiveness with value 44.6% and tangible with value 35.2% have compared with reliability, assurance, and empathy. From other research conducted by Ariyanto (2008) the result given little difference where the assurance shows the most high value that is, 77.1% and this can be happened because of the different location and respondents being selected.

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