

The Impacts of System Quality on use Under Top Management Support as Moderating Variables in the Implementation of Enterprise Resource Planning

(Empirical Study of Higher Education in East Java, Indonesia)

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Abstract

The purpose of this study is to analyze the impacts of system quality on use, and as well as to analyze the role of top management support as a moderate variable on the system quality effects on use in ERP implemented at some universities. In hope to achieve a superior and notable higher education system, the government decided to implement an independent institution with dignified, credible, and accountable accreditation viewed as a national and international referral and that is the National Accreditation Board of Higher Education (BAN-PT), and one of BAN-PT rating is to measure how far the ERP implementation is in College. This research was conducted in East Java Indonesia, taking 164 colleges as samples, with analysis tools using SEM version 22. The results showed that the system quality does not affect the use with p value = 0.213, and the moderate top management support in system quality impacts on use ERP Colleges, using p value = 0.000. The research conclusions are: 1). The most influential Indicator in top management support in order to determine the success of ERP implementation in colleges largely depends on the budget availability provided by the management, 2). The top management support variable is significantly proven to have contributed in strengthening or lessening the effect of system quality on use, 3) Universities in East Java-Indonesia in the implementation of ERP system are already reflecting the level of the user satisfaction above the average, as seen from the distribution of respondents responses that show an average value of 3.65 on a scale of 5, and which can be considered as good.

Keywords: ERP, top management support, and college.

PRELIMINARY

The implementation of information system has become as a demand and necessity in the management of colleges, so that the investment in information technology that is meant to improve competitiveness, facilitate the service and ensure a broad access in a clear blueprint, is a priority in the development of several universities. The use of information system in college apart from the idea that it has become a demand, will also necessitate the progress rating assessment toward a World Class University, and thus, its implementation is very important.

The information system capable of integrating several business activities include: human resources, marketing, production, and customer relations management, and finance on a single system through the use of shared database called Enterprise Resource Planning (ERP). ERP has the ability in: supply balance and demand for the company as a whole through its capability to connect customers and suppliers in a single unified chain availability, as decision support systems in business processes while intergrating all functional parts (Wallace & Kremzar, 2001).

A system quality is a combination of hardware and software in information system. Its main focus is the system performance, which refers to as how can hardware, software, policies, and procedures of information systems provide information usage requirements, while Use refers to how often the information system usage is (DeLone & McLean, 1992).

This research about the impacts of system quality on use in ERP implementation has resulted into a new diverse findings (research gap) where some are very supportive while others are not. Differences in the research results are based on the location of the study indicating that research conducted in developed countries tend to be favorable, whereas research conducted in developing countries tend to be supportive.

The linkage of two variables in an inconsistent model prove the existence of other variables with an indirect role meant to strengthen or lessen the effects of independent variables on dependent ones. Based from the research results differences in developed countries and developing countries, a moderator variable is then formulated regarding the different characteristics of developed and developing countries.

The characteristics difference between developed and developing countries are: culture, economics, history, politics, international relations, market orientation, development, efficiency, productivity, and management support. The difference in the management of ERP systems lies in the infrastructure and the transfer of science and technology.

Esteves, Pastor, and Casanovas (2000) state that top management support is a factor of success of ERP implementation. Bradford and Florin (2003) state that top management support affect the company's performance and the

satisfaction of the use of information system.

As far as the role of top management support, and the differences in the characteristics of developed and developing countries in the implementation of ERP are concerned, it can be said that the top management support indirectly contributes to the influence of the system quality on use. This is because no matter how good the quality of the product is, without a sound but pleasing character of the user, its implementation will come to no avail. Besides, the party management role through the support and its involvement is predictably thought to be able to bridge from the product quality level to the users' behavior, viewed as a process of technology transfer that determines its success.

The importance of this research is then to analyze the success of ERP implementation. ERP is a phenomenon where business is based on information technology with extensive use of each life activity, and which is one of the organizations required to promote the use of ERP in running the organization's activities is college.

ERP at college is considered as an indicator of higher education quality, the better the more frequent it is used and as result, its assessment and ranking on universities progress in the world in the utilization of information technology will also increase. There are 4757 universities in Indonesia, the majority of which are located in East Java Province (Forlap.dikti, 2015), and that is the reason why East Java was considered as a research object site.

East Java province harbors as much as 474 higher education which are divided into 88 colleges, 18 polytechnics, 261 high schools, 21 institutes and 86 universities. The scope of the coordination of universities in East Java is located in

the Ministry of Research, Technology and Higher Education (Research/TechMin) a total of 314 universities and 160 colleges are within the scope of the coordination of other ministries. The college status includes: as much as 444 active ones, numbering 6 transliterations, 2 of which were eliminated and as many as 22 are inactive (Forlap. dikti, 2015).

Formulation of the problem

Based on the research problems, the research questions are formulated as follows:

Does the system quality affect the use of ERP in universities in East Java, Indonesia?

Does the moderate top management support affect the use of ERP system quality in universities in East Java, Indonesia?

THEORETICAL BASIS

ERP Design

ERP first appeared in the 1960s in the form of MRP (Manufacturing Resource Planning), an early form in material processing. Investors got a better method for ordering materials and components using this technique. The underlying logic of this concept are: 1) What would be made, 2) What is required to make it, 3) What do they have, and 4) What is already obtained (Wallace & Kremzar, 2001).

ERP implementation has some objectives, among them, to: 1). Improve customer service, 2). Increase productivity, 3). Cost reduction and inventory turnover, 4). Supply chain management and e-commerce (Wallace & Kremzar, 2001). ERP strength lies in: 1). Single gear in enterprise resource planning, 2). Integrating sales data, operations and finance, 3) Connecting approaches to resource planning towards the development of the availability chain customers and resellers.

Modules on packets of ERP system are designed for integrating business activities, although its implementation requiring companies to select multiple modules as needed by the company. The completeness of modules on each package depends heavily on consumer targets and the development of software created by the company.

Top Management Support

With regard to top management in information system, it is the party which is responsible for providing general guidelines for all activities concerning information system. The level of support provided by top management of the organization's information system can be a very important factor in determining the success of all activities related to information system.

Top management support has influential activities that lead and maintain human behavior as shown by the director, president, head of division, direct supervisor, etc. Steps in top management that can be used to provide support include: 1) Identifying the organization's members and their needs, 2) establishing the objectives to be achieved based on the principles of targeted rights, 3) developing a reliable performance measurement system that can periodically provide feedback, 4) providing a task to the members according to their abilities and talents, 5) supporting any completed tasks through training while fostering a sense of belonging, 6) developing a fair reward system with full compensation, and 7) being fair, objective and good example (Trisda & Dwirandra, 2013).

Top management is committed to time, cost, and resources meant to support the supplier so that a long-term partnership will occur and that companies can also remain there and unshakably progressive. One thing that is important for

top management in running a business is to be able to constantly develop and create a value for the company in order to improve the organizational performance (Chen & Paulraj, 2004).

Commitment and leadership at top management in an organization is measured through: effective leadership, Visible (Carr & Smeltzer, 1997), and creativeness in thinking and understanding of the inter-company cooperation (Krause, 1999). Top management support in information system can be seen from the extent to which management understands the importance of information system functions, and its involvement in the activities of information system. The support of top management is characterized by an interest in the functioning of information system, and encourage the operating unit to collaborate with information system (Boynton et al. 1992).

Higher Education in Indonesia

Higher education in Indonesia is set with the scope of governmental coordination under the Ministry branch, institution under Non-Governmental branch (agencies and institutions), governmental branch under the Indonesian National Police, and those under the Indonesian National Army. While college status is grouped into active status, transliteration, elimination, management transfer, and non-active (Forlap.dikti, 2014).

ERP System in Higher Education

BAN-PT (2011), requires a standard information system stipulating that each university has to have an information system which is ready to support the management and improvement of the quality of academic program. The information system in a minimal college consists of data collection,

data analysis, storage, data retrieval, data presentation and information, and communication with the interested parties. Data and information managed by the university may include academics, student affairs, human resources, infrastructure and facilities for administration and finance as well as other information that is necessary for the interests of various parties. In many ways, universities must be able to take advantage of their own information system in order to maintain the communication and the internal coordination as well as the cooperation with other institutions, government, alumni, companies/industries of the general public (BAN-PT, 2011).

Developing a fast technological information implies that university has to be able to perform professional management as well as an update on the hardware and software, human resources and management organization in hope to ensure the growth of information system that builds it. Also, college must ensure free access for students, staff and other academic society to take advantage of the existence of the information system through transparent regulations (BAN-PT, 2011).

College information system standards can be assessed based upon some assessment elements that have been set by BAN-PT, which include:

College should have a clear blue print of development, management and use of information system, including systems that regulate the data flow, data access authorization, and disaster recovery system.

Colleges have a decision support system assisting the management in conducting planning and analysis with a good self-evaluation and decision-making that is more objective.

The information system in the form of databases and information provide a minimal financial cover, assets, facilities

and infrastructure, academic administration, profiles of students and graduates, lecturers and support personnel.

Universities have an information system that is used for campus internal and external communications as well as providing free access for students and teachers about scientific information sources.

Universities should have an adequate bandwidth ratio of internet capacity for each student.

HYPOTHESIS DEVELOPMENT

System quality and use

DeLone and McLean (2003) state that the system quality has an impact on use. Previous researches supporting that idea include: Venkatesh (2000), Livari (2005), Hsieh and Wang (2007). Other researches that are empirically opposing such of DeLone and McLean were conducted by McGill et al. (2003) emphasizing that the perceived information quality and perceived system quality is instead a significant predictor for use.

ERP system quality is easy to use since it is reliable, functional, and flexible, which data is thoroughly complete and that will certainly encourage a continuous but sustainable use of the system. Based on these descriptions, this study is hypothesized as follows:

H1: System quality influence on use in ERP implementation Quality System, Use and Top Management Support

Research on system quality effects on use has varying results as some researchers support them, for instance: Iqbaria (1997), Vankatesh (2000), and Hong et al. (2001), while most studies do not back them as well and that include: Subramanian (1994), Straub et al. (1995), Markus et al. (2000) and Gill (2010).

The research results show an inconsistency regarding the system quality impacts on use in case that the research location demonstrates that at spot, having high levels of top management support in the implementation of ERP system which is viewed as a significant result, like those researches conducted in by: Rai et al. (2002), Hsien and Wang (2007), and Halawi et al. (2007).

A company possessing a low top management support in the implementation of ERP system, ends into an insignificant result concerning the impacts of system quality on use, like the research undertaken by Baheshti (2006) stating that no matter how good or sophisticated the system to be used, without the supervision of a leader, failure will prevail due to resistance from users who are not interested in any new stuff. The research result is considered as insignificant since it is not associated with top management support. Zhen, Yuqiang, and Qing (2012) state that the use of consistent and sustainable system thoroughly influenced top management support through policy implementation of the system. Baheshti (2006) expressed that top management support is absolutely necessary in safeguarding the ERP system operation, in the preparation of human resources, technology transfers, funding for training, and other infrastructures.

The research results undertaken by Zhen, Yuqiang, and Qing (2012), and Baheshti (2006) showed a significant influence of the top management support on use. In other words that use would increase if the support of top management is also increasing, so it is assumed that the impacts of system quality on use depend primarily upon the strengths and weaknesses of top management support. This research takes into consideration the top management support as a moderator

variable regarding the impacts of the system quality on use where few hypotheses are proposed as follows:

H2: Top management supports moderate the effects of system quality on the ERP use system.

RESEARCH METHODS

Population

The study population is colleges located in East Java, both public and private ones under the scope of the ministry of Research and Technology and Higher Education (Research/TechMin) coordination, having an active status as many as 285, due to the structuring of college information in the sphere of coordination of Research/TechMin that already leads the implementation of ERP systems, ERP instances in universities, among them: Lecturers Career Development Information system (SIPKD), PDPT, Simlitabmas, self-evaluation, garuda portal, e-journals, EPSBED, etc. while at college in the scope of coordination other than the Research/TechMin in partial information systems have not been integrated on a single database.

Only active colleges are chosen since only higher education is considered as active which standardize the management of information system required by BAN-PT. Detailed profiles of universities in East Java based on the scope of coordination, and status are presented in Table 1.

The sample includes colleges as rated in Webometrics reaching as many as 57, whereas unrated ones were 107. Three (3) respondents were taken as samples in various colleges assuming that number could represent their respective universities in the reflection of the quality of ERP system.

Respondents in this study are university employees in the field of information system who have the authority

and duties in the management of ERP system, among them include: those who have the authority to access, have an account and password that is managed by the system, and those who have the right to input, print, validate, and respond to the data. The respondents can be represented by operational personnel, managers, or the person in charge of information system. The number of respondents involved in the study is briefed as $3 \times 164 = 492$.

Sampling technique

The sampling technique recourses to the use of disproportionate stratified random sampling, because the management information system at the universities can be put into 2 (two) strata, namely: rated and unrated colleges as set in Webometrics. Based on the Webometrics ranking of universities in East Java under the coordination sphere of the Research/TechMin, 57 of them were rated where 22 were not, so the population is stratified but not proportional. Webometrics is one device or system used to measure or give an assessment of the progress of the best universities in the world via the college's Website, aiming to convince the academic community, and policies of the importance of web publications that are not only for the dissemination of academic knowledge, but also to measure scientific activities, performance and impact.

DATA ANALYSIS

The Structural Equation Modelling (SEM) using the software Amos 22, is a tool used to analyze data in this research. SEM analysis tool is used because it is in conformity or suitable with the collected data, and which is fit for the research purpose when using analysis tools.

SEM which closely with Moderation Relations is used to assess the moderate influence using the method

suggested by Ping (1995) stating that a single indicator should be used as an indicator of a moderate variable. The single indicator is the multiplication between exogenous latent variable indicator by indicator variables moderator. Steps being taken in the Ping method is as follows:

The first stage is an estimation model which is used without inserting the interaction variable, where only 2 (two) remain, and that is the ξ_1 and ξ_2 exogenous variables which are used to predict the endogenous variables η_1 .

The output results model is used calculate the value of interaction latent in loading factor variable (λ interaction) with the error variance values of the latent variable indicator of interaction as shown in the following formula:

$$\begin{aligned} \lambda \text{ Interaction} &= (\lambda x_1 + \lambda x_2) (\lambda z_1 + \lambda z_2) \\ \theta q &= (\lambda x_1 + \lambda x_2)^2 \text{Var}(x) (\theta z_1 + \theta z_2) \\ &\quad + (\lambda z_1 + \lambda z_2)^2 \text{Var}(z) \\ &(\theta x_1 + \theta x_2) + (\theta x_1 + \theta x_2) (\theta z_1 + \theta z_2) \end{aligned}$$

Where,

λ Interaction = loading factor from latent interaction variable.

θq = error variance from indicator latent interaction variable.

The second phase, insert the λ values interaction and θq into the model with interactions variable. The result of the calculation of the loading factor interaction is used to set the value of the parameter loading interaction value, while the result of the calculation error variance interaction variables is used to define the error variance of interaction variable.

RESULTS AND DISCUSSION

The frequency distribution and the respondents' interpretation score for each variable is displayed as follows:

Variable Quality System

The Variable System quality is measured by using eight (8) questions, with the results of the frequency distribution shown in Table 2.

Table 2 shows the distribution, and the percentage of respondents' responses with a mean value for the variable quality system. The average value of respondents' answers are ranged from 3.34 for the first question concerning the ERP system which is easy to use, up to 3.62 for the second question on ERP system which is very accessible.

Top Management Support Variable

The top management support variable was measured by using eight (8) questions, with the results of the frequency distribution shown in Table 3.

Table 3 shows the distribution, and the percentage of respondents' responses with a mean value of the management support variable. The average value of the respondents' answers are ranged from 3.59 for the first and the fourth question is about the management support on the availability of adequate hardware and also about the facilitating management of the system development, up to 3.77 for the tenth question which is about the management estimation provision for the development of the ERP system.

Feasibility Evaluation Model

Feasibility Evaluation Model is undertaken by using two kinds of analysis techniques, namely: Confirmatory Factor Analysis (CFA), on the SEM which has been used in hope to confirm the most dominant factors in a group variable, and the Regression Weight on the SEM that is used to determine how large the mutual influential research variables are.

CFA Quality System

CFA Construct System quality (SQ) is the stage of dimensions

measurement that make up the latent variables in the construct. SQ is measured with 4 (four) indicators symbolized as: SQ1, SQ2, SQ3, and SQ4. The estimation results measurement model is presented in Figure 1.

Feasibility Model System quality Constructs displayed in Figure 1, reveals that the measurement model to construct system quality specified in this data as a whole is consistent and fit with the data, with Chi-square value = 1.133 which is less/smaller than the chi-square table in $\alpha = 0.05$ and $df = 2$ is 5.99, indicating that the sample covariance matrix is significantly different from the estimated covariance matrix in the model.

The RMSEA value = 0.000 indicates that the so-called value known as the goodness of fit as suggested by (Hair et al., 2010) is <0.08 , and that the gap between the differences of sample covariance matrix with covariance matrix is estimated in the model per degree of freedom ($df = \text{degree of freedom}$) is very thin.

CFA Top Management Support

CFA construct of top management support (DMP) is a phase measurement of the dimensions that make up the latent variables in the construct. DMP variables are measured by five (5) indicators symbolized by DMP1, DMP2, DMP3, DMP4, and DMP5. The estimation results of the measurement model is shown in Figure 2.

The estimation of measurement model constructs in top management support as demonstrated in Figure 2 discloses that the measurement model to construct the support of top management specified in this data as a whole is consistent and fit with the data, with Chi-square value = 12.384 which is close to the value of chi-square table at $\alpha = 0.05$ and $df = 5$ is 11.07, indicating that the sample covariance matrix is significantly exact

same with the estimated covariance matrix in the model.

The RMSEA value = 0.095 indicates that the value is approaching the goodness of fit as suggested by (Hair et al., 2010), ie <0.08 , and that the gap between the differences of sample covariance matrix with covariance matrix is estimated in the model per degree of freedom ($df = \text{degree of freedom}$) is so thin.

SEM with Moderation Relation

The variable analysis exsogen on quality system, uses an endogenous variable and moderator top management support variable, demonstrated in 2 stages:

a. Phase I is based on model estimation without entering interaction variables to get the value of the loading factor and error variance of latent exogenous variable quality system. The model is shown in Figure 3.

The loading factor latent interaction variable is the interaction between the system quality and the top management support, and Table 4 is used to calculate the value of the error variance, with the formula below:

λ interaction

$$\begin{aligned} & (\lambda_{sq1} + \lambda_{sq2} + \lambda_{sq3} + \lambda_{sq4}) (\lambda_{dmp1} + \lambda_{dmp2} + \lambda_{dmp3} + \lambda_{dmp4} + \lambda_{dmp5}) \\ & = (.528 + .435 + .593 + .778) \\ & \quad (.513 + .535 + .654 + .599 + .504) \\ & = 6,54687 \end{aligned}$$

$$\begin{aligned} \theta_q &= (\lambda_{sq1} + \lambda_{sq2} + \lambda_{sq3} + \lambda_{sq4})^2 (sq) \\ & \quad (\theta_{dmp1} + \theta_{dmp2} + \theta_{dmp3} + \theta_{dmp4} + \theta_{dmp5}) + (\lambda_{dmp1} + \lambda_{dmp2} + \lambda_{dmp3} + \lambda_{dmp4} + \lambda_{dmp5})^2 (dmp) \\ & \quad (\theta_{sq1} + \theta_{sq2} + \theta_{sq3} + \theta_{sq4}) + (\theta_{sq1} + \theta_{sq2} + \theta_{sq3} + \theta_{sq4}) \\ & \quad (\theta_{dmp1} + \theta_{dmp2} + \theta_{dmp3} + \theta_{dmp4} + \theta_{dmp5}) \\ & = (.528 + .435 + .593 + .778)^2 (.699) \\ & \quad (.263 + .286 + .428 + .359 + .254) + \\ & \quad (.513 + .535 + .654 + .599 + .504)^2 (.357) \\ & \quad (.279 + .189 + .352 + .605) + \end{aligned}$$

$$(.279+.189+.352+.605) \\ (.263+.286+.428+.359+.254)= 18,9011$$

b. Phase II is based on model estimation by entering the variable interactions and the variable loading factor value in the interaction constraint using a value of 6.54687, and the error variance value of the interaction variable is constrained by the value of 18.9011. The model is then inserted in the interaction variable as shown in Figure 4.

The estimation model measurement constructs on quality system, use, and support of top management, as indicated in Figure 4.11 reveals that the models specified in this data as a whole has not been consistent and has not been fit to the data, because the value of Chi-square = 97.158 is greater than the value of chi-square table at $\alpha = 0.05$ and $df = 60$ was 79.08. The RMSEA value = 0.062 indicates that the value is approaching the goodness of fit as suggested by (Hair et al., 2010) is < 0.08 , and the gap between the differences of sample covariance matrix with covariance matrix is estimated in the model per degree of freedom ($df = \text{degree of freedom}$) which is very thin. Below presented in Table 4 is the test results of model suitability as presented in Table 4.

The summary of the test results of models suitability in Table 4 can be concluded that the construct is used to form a model which has already met the criteria of goodness of fit that has been applied.

The significance of parameter values concerning the impacts of system quality on use, the influence of top management support on use, and the variable quality of interaction between the system and the support of top management, are presented in Table 5.

The test influence results between the constructs as in demonstrated in Table 5 shows that the system quality having no

impacts on use, is characterized by the value of CR obtained 1,245 and below the required value is > 1.96 , and the probability values obtained 0.213, the value is above the significance level that have been determined to be 0,05. The top management support influences on use, characterized by CR value of 2.003, and above the required value is > 1.96 , and the probability value of 0.045, the value is below the predetermined significance level is 0.05. The interaction variable between the system quality and top management support affect the use probability with a value of 0,000, which allows us to conclude that the top management support is a moderate variable regarding the impacts of system quality on use.

Hypothesis testing

The conducted data analysis results have met the criteria of goodness of fit as described in Table 6 and it can be proceeded into hypothesis testing as an already proposed hypothesis.

Hypothesis 1

Hypothesis 1, the system quality affects the use in ERP implementation, and the parameter estimation for testing hypotheses 1 is seen from the CR and the p value, while the test results obtained by the value of CR (critical ratio) is 1.245, and p value is 0.213. CR value and p value indicate a value below ± 1.96 for CR, and above 0.05 for p value.

The results of these tests show that the system quality does not affect the use in the implementation of ERP, and that allows us to draw a conclusion that the first hypothesis has not been supported enough.

Hypothesis 2.

Hypothesis 2, indicates the moderate top management support on impacts of the system quality on use. The

estimation parameter used to test the hypothesis 9 can be seen from both the CR and the p value, while the test results obtained by CR value (critical ratio) is amounted to 3,926, and the p value is 0.000, the CR value and p value indicate a value above ± 1.96 for CR, and under 0.05, for p value.

The results of these tests show that top management support strengthens the influence of system quality on use, or moderate top management support on system quality on use. As a conclusion, the hypothesis 9 is supported.

DISCUSSION

Discussion Hypothesis 1

With regard to the system quality impacts on use, the results of the analysis in this study shows that the system quality does not impact the use in the implementation of ERP established at some universities in East Java.

As a results, this research does not support the theory provided by: DeLone and McLean, 2003, and Halawi et al., 2007, stating the effect of system quality on use. The underlying differences can be interpreted in the results due to the choice of the research object. Some universities in East Java under the scope of coordination of Research/TechMin numbering 285, and based on the data in 2015 obtained from Webometrics totalled as much as 57 or 20% of those incoming colleges in the Webometrics ranking which suggests that the activity-based information technology is still very low.

BAN-PT in process of accreditation of higher education requires the application of good information system in order be able to support the implementation of *Tridarma* Universities. Besides, the management of facilities and infrastructure can ensure a broad access, especially for students and professors,

through the utilization of shared resources (resource sharing).

A good information system as reflected on the ownership of clear blue print development, management and utilization of a complete information system, and the ownership of the decision support systems (decision support system) is thoroughly complete, effective, and objective.

The data taken from Kopertis region VII Surabaya (2016), shows that among those 1,783 courses exist in East Java, 403 (22.6%), those courses were not accredited, but as many as 832 (46.6%) were accredited C. Courses that have not been accredited and accredited C show that the application of the system of information requiring BAN-PT is still lacking.

The system quality does not affect the use in the implementation of ERP at some universities in East Java proving the availability of low system quality on use which is not yet optimal due to lack of awareness to be able to distinguish what is still lacking.

Discussion Hypothesis 2

This stage is about the dimensional discussion on moderate top management support regarding the impacts of system quality on use. The test results on the influence of the dimensions of moderate top management support about the impacts of system quality on use (H9) as far as the implementation of ERP system at some universities in East Java is concerned, show that the support of top management is proven as a moderate variable on the effect of system quality on use, as characterized by p -value = 0.00.

Top management support is needed in hope to safeguard the ERP implementation, providing a good system quality without escort and personal approach in its operation which is not yet optimal in its use and results as well.

The effect of system quality on use would increase if accompanied by the increase of top management support, proving the existence of moderate top management support concerning the impacts of system quality on use.

ERP helps managers to communicate and distribute information, but has only limited support for management on decision making. Decision-making is an area of top management designed to affect the entire business process.

ERP can transform organizations including products, services, operating procedures, and controls the organization leading it into a new innovative behavioral patterns. Universities depend largely on the use of ERP as a means of data communication between departments in universities.

Using technology to gain strategic advantage requires careful planning and management. Managers who are interested in the use of information system to get a competitive advantage need to undertake an analysis of strategic system.

CONCLUSIONS, SUGGESTIONS AND RECOMMENDATIONS

Conclusion

The top management support in ERP implementation at some universities in East Java in general is good. The management support that possesses the greatest mean value depends primarily on the availability of calculation equal to 3.77. This shows that the availability of the budget provided by the management is predominantly viewed as a necessity, having the most powerful influences compared with indicators other than another top management support.

The results analysis proves that top management support reinforces the impacts of system quality on use in the implementation of ERP at some

universities in East Java. It can be concluded that the inconsistency of the results of previous studies on the effect of system quality on use is simply influenced by other variables, and one of such variable is the top management support.

Universities in East Java-Indonesia in the implementation of the ERP system is already reflecting the level of user satisfaction at a level above the average, as seen from the distribution of answers from respondents indicating an average value of 3.65 on a scale of 5, and which can be categorized as good.

Suggestion

ERP implementation in colleges is compulsory as suggested by the provision from BAN-PT where its implementation would require hardware, software, and most importantly brain ware, and as a result, in hope to increase the competitiveness between universities, it is necessarily advisable to have an investment policy from the university itself in the field of information technology associated with human resources in the IT division.

The quality and quantity of ERP system in higher education needs to be increased in order to enhance the service through a system of information to all parties, improving the competitiveness of universities in web activity, and which has to be always in conformity with technology.

It is important to enhance the increase of university ranking through accreditation, and one strategy meant to increase such accreditation value is by having a better information management system.

Universities in Indonesia which have already been registered within the ranking provided by Webometrics should be increased, since the number of universities that have not been able to do

so remain so high hovering more than 75% at the national level, and 80% of them in East Java, so the need of a real endeavor to get into such ranking, and an effort that could be pursued to do so is through top management support that has to be totally complete, and where investment in information system should become as a priority.

Recommendation

The use of ERP system by companies in Indonesia continues to grow, and the use of features that continue to evolve has to symmetrically correspond with the company's development, however, some companies failed to implement it, therefore an information system is a prerequisite and should be in detail, and valid, thus the decision to implement and adopt an ERP system would be considered.

The failure to implement it should be minimized by placing appropriate human resources, selected from the 21st century generation, and in line with the development of swift IT. It is believed that, the current generation of 21st century, can master technology more quickly than the previous generation, so it is very important to undertake researches on human resources associated with managerial ERP, because ERP is not just as skill, but also the need for being ready to receive and give (team work).

Further studies need to be considered in brain-ware factors, since the results of this study indicate that the system quality (hardware), the level of use, and the quality of software are good, something that is in contrast with what is seen from the majority of universities in Indonesia, which are rated by Webometrics as very few (25%). Hardware and software already exist and considered as good for it is proven that all of those universities already possess an information system and some have been

accredited BAN-PT, which is one of the standard assessment system in information availability. This shows that there is a problem in the brain ware system information.

REFERENCES

- Baheshti, 2006, "What Manager Should Know About ERP/ERP II", *Management Research New*, vol. 29 no. 4, pp. 184-193.
- BAN-Perguruan Tinggi, 2011, *Kumpulan instrument standart 11 sistem informasi Perguruan Tinggi*, Departemen pendidikan Nasional.
- Boynton, William C., Johnson, Raymond N & Walter G. Kell., 2001, *Modern Auditing 7th Edition*, John Wiley & Sons, Inc, New York
- Bradford, M., and Florin, J., 2003, "Examining the Role of Innovation Diffusion Factors on the Implementation Success of Enterprise Resources Planning Systems", *International Journal of accounting information system*, vol. 4, no. 3, pp. 205-225, doi: 10.1016/S1467-0895(03)00026-5
- Carr, A.S., Smeltzer, L.R., 1997, "An Empirically Based Operational Definition of Strategic Purchasing", *European Journal of Purchasing and Supply Management*, vol. 3, no. 4, pp. 199– 207
- Chen, I.J., Paulraj, A., 2004, "Towards of Theory of Supply Chain Management: the Construct and Measurement", *Journal of Operations Management*, vol. 22, pp. 119-150.
- DeLone, McLean, 1992, "Information System Success: The Quest for the Dependent Variable", *The Institute of Management Sciences, Information System Research* 3:1, pp. 60-95.
- DeLone, McLean, 2003, "The DeLone and McLean model of information system success: a ten-year

- updated”, *Journal of management information system*, vol. 19, no. 4, pp. 9-30.
- Esterves, Pastor, Casanovas, 2000, *Towards the unification of critical success factors for ERP- implementations*, 10th Annual Business Information Technology Conference (BIT), Manchester
- Gill, A., *et al.* 2010, “The Relationship Between Transformational Leadership and Employee Desire for Empowerment”, *International Journal of Contemporary Hospitality Management*, vol. 22, no. 2, pp. 263-273.
- Halawi, L.A., McCarrthy, R.V., and Arison, 2007, “An empirical investigation of knowledge-management system success”, *The Journal of computer Informations system*, vol. 48, no. 2, pp. 121-135.
- Hong, K., and Kim, Y., 2002, “The Critical Success Faktor for ERP Implementation: an Organizational Fit Perspective”, *Information and Management*, vol. 23, no. 4, pp. 25-40.
- Hsieh, J.J.P.A., and Wang, W., 2007, “explaining employees extended use of complex information system”, *European journal of informations system*, vol. 16, no. 3, pp. 216-227.
- <http://forlap.ristekdikti.go.id/perguruantingg i/homerekap/NTM1QzA4QzYtNzM yMS00RjdFLThCMzktQ0E1NzdDO Tk3MDRF/0>, in access: 8 Agustus 2015.
- Igbaria, M.N., Zinaelli, P.C., and Cavaye, L.M., 1997, “Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model”, *MIS Quarterly*, vol. 21, no. 3, pp. 279-305.
- Krause, D.R., 1999, “The Antecedents of Buying Firm’s Efforts to Improve Suppliers”, *Journal of Operations Management*, vol. 17, no. 2, pp. 205– 224.
- Krause, D.R., Ellram, L.M., 1997, “Critical elements of supplier Development”, *European Journal of Purchasing and Supply Management*, vol. 3, no. 1, pp. 21– 31.
- Livary, Juhani, 2005, “An Empirical Test of The DeLone-McLean Model of Information System Success”, *Data base for Advance in Information System (DFA)*. ISSN: 1532-0936, vol. 36, pp 89-103.
- Livary, Juhani, 2005, “An Empirical Test of The DeLone-McLean Model of Information System Success”, *Data base for Advance in Information System (DFA)*. ISSN: 1532-0936, vol. 36, pp 89-103.
- Markus *et al.* 2000, “Learning from adopters experiences with ERP problems encountered nad success achieved”, *Journal of information technology*, vol. 15, pp. 245-265.
- McGill, T.J., and Klopas, J.E., 2005, “The Role of spreadsheet knowledge in user-developed application success”, *Decision support system*, vol. 39, no. 3, pp. 355-369.
- Rai, A., Lang, S., dan Welker, R. B., 2002, Assesing the validity of IS success Model: An empirical test of and theoretical analysis”, *European journal of information system*, vol 13, no. 1, pp. 50-69.
- Straub, D., Limayem, M., and Karahanna-Evaristo, E., 1995, “Measuring system usage: Implications for IS theory testing”, *Management Science*, vol. 41, pp. 1328-1342.
- Subramanian, G.H., 1994, “A Replication of Perceived Usefulness and Perceived Ease of Use

- Measurement”, *Decision Sciences*, vol. 5, no. 5-6, pp. 863-874.
- Trisda dan Dwirandra, 2013, “Pengaruh dukungan manajemen puncak, kualitas sistem, kualitas informasi, pengguna aktual dan kepuasan pengguna *pada* implementasi sistem informasi keuangan daerah di kota Denpasar”, *e-jurnal akuntansi universitas Udayana*, vol. 4, no. 1, pp. 196-214.
- Venkatesh, V., 2000, “Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model”, *Information systems research*, vol. 11, no. 4, pp. 342–365.
- Wallace dan Kremzar, 2001, *ERP: Making It Happen, The Implementers’ Guide to Success with Enterprise Resource Planning*, John Wiley & son, inc, Newyork.
- Zhen Shao, Yuqiang Feng, Qing Hu, 2012, “How leadership style impact enterprise system success throughout the lifecycle: A Theoretical exploration”, *Hawaii International Conference on system sciences*, DOI 10.1109/HICSS.2012.303, pp. 4692-4701.

Table 1 College Profile in East Java Based on the Scope of the Coordination

No.	Status	Scope of Coordination		Total
		Other Ministries	ResearchTechMin	
1	Active	159	285	444
2	Transliteration	1	5	6
3	Cleared	0	2	2
4	Managed	0	0	0
5	Non Active	0	22	22
TOTAL		160	314	474

Source : PDPT-2015.

Table 2 Distribution of Respondent Answers on Variable Quality System

Item	SCORE										Mean in 5 scale
	1 (STS)		2 (TS)		3 (CS)		4 (S)		5 (SS)		
	f	%	f	%	f	%	f	%	f	%	
SQ1	8	1.6	103	20.9	161	32.7	153	31.1	67	13.6	3.34
SQ2	6	1.2	46	9.3	160	32.5	198	40.2	82	16.7	3.62
SQ3	2	0.4	53	10.8	207	42.1	187	38	43	8.7	3.44
SQ4	6	1.2	93	18.9	170	34.6	161	32.7	62	12.6	3.36
SQ5	2	0.4	42	8.5	215	43.7	172	35	61	12.4	3.50
SQ6	2	0.4	35	7.1	211	42.9	178	36.2	66	13.4	3.55
SQ7	4	0.8	67	13.6	169	34.3	167	33.9	85	17.3	3.53
SQ8	7	1.4	68	13.8	182	37	133	27	102	20.7	3.52

Sources: Processed Primary Data (March, 2016)

Table 3 Distribution of respondents' Answers Scores in Top Management Support Variables.

Item	SCORE										Mean in 5 scale
	1 (STS)		2 (TS)		3 (CS)		4 (S)		5 (SS)		
	f	%	f	%	f	%	f	%	f	%	
DMP1	8	1.6	58	11.8	145	29.5	196	39.8	85	17.3	3.59
DMP2	6	1.2	65	13.2	128	26	207	42.1	86	17.5	3.61
DMP3	7	1.4	67	13.6	122	24.8	216	43.9	80	16.3	3.60
DMP4	8	1.6	64	13	125	25.4	216	43.9	79	16.1	3.59
DMP5	6	1.2	49	10	134	27.2	194	39.4	109	22.2	3.71
DMP6	8	1.6	48	9.8	140	28.5	207	42.1	88	17.9	3.64
DMP7	17	3.5	50	10.2	132	26.8	203	41.3	90	18.3	3.61
DMP8	17	3.5	56	11.4	119	24.2	201	40.9	99	20.1	3.63
DMP9	9	1.8	41	8.3	130	26.4	200	40.7	112	22.8	3.74
DMP10	13	2.6	35	7.1	117	23.8	212	43.1	115	23.4	3.77

Sources: Processed Primary Data (March, 2016)

Table 4 Model Conformance Test Results

Goodness of Fit Index	Cut-off value	Results	Evaluation Model
Degree of freedom (df)		60	
Chi-square	< from chi-square table for df = 60 (79.08)	97.158	Marginal
Cmin/df	≤ 2.00	1.619	Good
AGFI	≥ 0.90	.881	Good
GFI	≥ 0.90	.922	Good
TLI	≥ 0.95	.963	Good
CFI	≥ 0.95	.971	Good
RMSEA	≤ 0.08	.062	Good

Sources: Processed Primary Data (March, 2016)

Table 5 Regression Weight

			Estimate	S.E.	C.R.	P
USE	<---	SQ	.149	.120	1.245	.213
USE	<---	DMP	.248	.124	2.003	.045
USE	<---	Interaction	.003	.001	3.926	***

Sources: Processed Primary Data (March, 2016)

Table 6. Ratio on Critical Value and Impacts Significance between Variables

Influences	CR	P value	Conclusion
USE <--- SQ	1.24 5	.213	Not Significant
USE <--- Interaction SQ.DMP	3.92 6	***	Significant

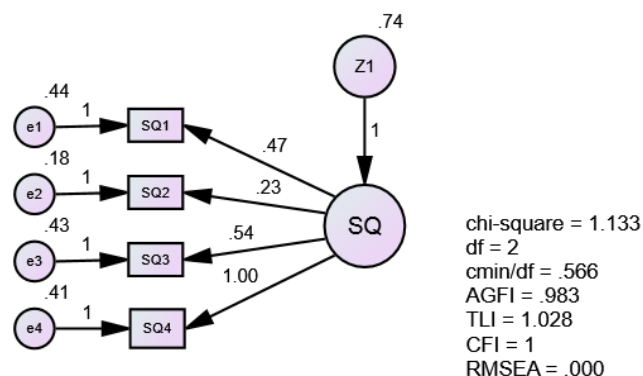


Figure 1 Estimation Model Quality Measurement System Construct

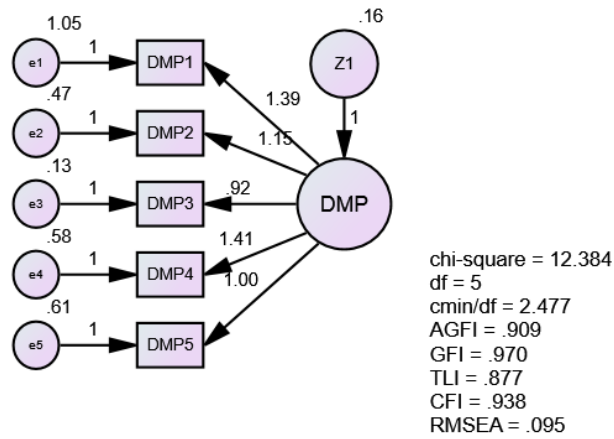


Figure 2 Estimation Model Measurement on Top Management Support

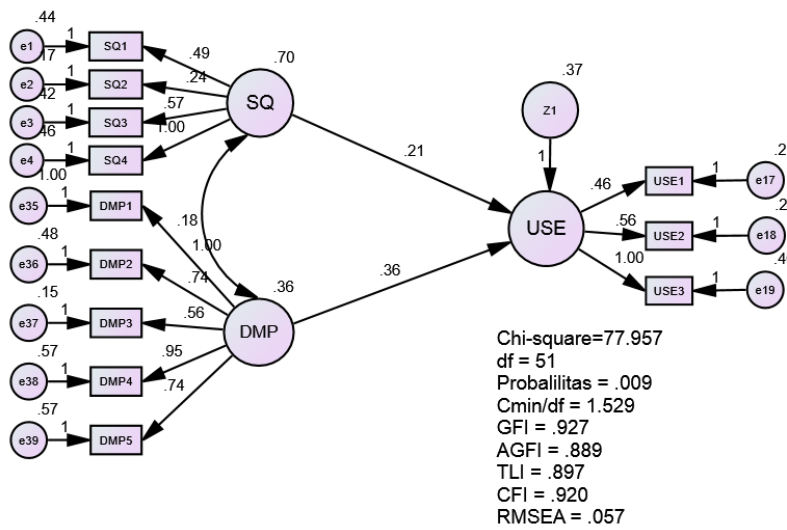


Figure 3 Phase I Model without Moderation Quality System, Top Management Support and Use

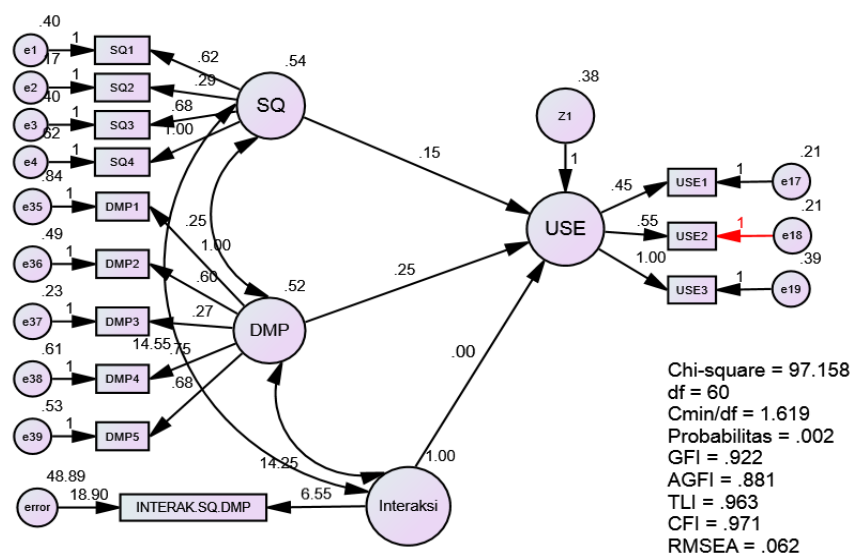


Figure 4. Model with Moderation Variable on Quality System, Top Management Support and Use