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CRITICAL FACTORS AFFECT TO PROJECT MANAGEMENT

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Abstract *– This research is designed to analyze critical success factors which consisted of support of top management, the contribution of project management, implementation of education and training, user involvement in the success of ERP system implementation at PT. EDS Manufacturing Indonesia. The research method used is multiple linear regression analysis using questionnaire distribution. The population was the company employees, with 59 respondents being used as samples. The sampling method is purposive sampling, which was taken from various strata in the company that is actively involved in the implementation and use of the ERP system. The hypothesis testing was carried out using a validity test, reliability test, t-test, and F-test as well as quantitative descriptive analysis. Data was obtained by using a questionnaire instrument containing a list of statements to measure respondents according to research variables. The results indicate that partially, the contribution of project management has a significant effect on the success of ERP systems implementation. While the support of top management, implementation of education and training and user involvement does not have a significant effect on the success of ERP system implementation. All critical factors success can explain their relationship to the success of ERP system implementation by 31.0%*

Keywords: *project management; ERP system; implementation process*

INTRODUCTION

The external situation of the company, the growing business sector in 2018 is the manufacturing industry (Winosa, 2018), especially in the automotive sector. As it is understood that an effective business strategy to increase business performance is to have aggressiveness by using information technology as the backbone in carrying out information integration. In its development, information technology that is widely adopted by many companies is an information system known as the Enterprise Resource Planning System, or often referred to as an ERP system.

Nickles et al. (2016) said that the ERP system is a combination of computer functions from all divisions such as finance, material requirements planning, human resources, and order fulfillment into an integrated software program that uses a single database. The result is a shorter time between orders and payments, less staff to order, and order processing, reduce inventory, and better customer service for all companies involved.

Business conditions about ERP system implementation are illustrated in a report issued by Panorama Consulting Solution (2016) where one of the 3 most reasons companies that implement ERP systems is to increase business performance by 13%. Business performance must be supported by the integration of technology with the use of ERP systems (Panoramic Consulting Solution, 2016).

On the other hand, implementing ERP systems must be based on rules and requirements to be successful. ERP system implementation itself is described as an implementation activity consisting of a series of activities that have high complexity that have an impact on changes in information systems and operations of the company and require very large costs. ERP system implementation must consider critical success factors (Arvidsson and Kojic, 2017) including support of top management, the contribution of project management, implementation of education and training, and user involvement.

As one of the manufacturing companies in Indonesia engaged in the automotive component sector, PT. EDS Manufacturing Indonesia, which has been operating since 1989, has used an in-

house developed application system to support its business operations. The application system is developed internally by the IT department using Oracle-based programs. This application system was developed based on the needs of a stand-alone part even though it was sought to be in harmony with the process in other parts that exist. So that the information generated cannot provide comprehensive information that can help top management to respond to existing business developments.

Each report submitted to top management cannot be generated directly from the existing application system but needs to be carried out further data processing carried out outside the application system or done manually using a spreadsheet. This results in requiring a longer time to produce informative data. Because the process is done manually, the accuracy of the data is low. This condition is an obstacle for top management. Monthly reports are reports needed by top management to find out the company's performance at that time. Based on confirmation from one of the employees of the Finance Accounting Department that a new monthly report can be issued after the fifth working day at the beginning of each month. Since, this is part of a project management, so that, the project owner and the main contractor has to have a good communication (Nusraningrum & Priyono, 2018).

In mid-2016 the management of PT. EDS Manufacturing Indonesia decided to implement an ERP system which at the same time issued a policy from WHQ, which was in Japan, to integrate information through the implementation of ERP systems. The selected ERP system application is called SAP ERP CC 6 HANA.

Based on these conditions, this research was conducted to see the effect of critical success factors that support ERP system implementation, in this case, SAP ERP CC 6 HANA so that it can be implemented at PT. EDS Manufacturing Indonesia consists of 4 critical success factors delivered by Arvidsson and Kojic (2017), namely the support of top management, the contribution of project management, the implementation of education and training and user involvement.

LITERATURE REVIEW

Enterprise Resource Planning (ERP) is the incorporation of computer functions from all divisions and subsidiaries of companies such as finance, human resources, and fulfillment of orders into an integrated software program that uses a single database. The result is a shorter time between orders and payments, less staff needed to process an order, reduce inventory, and better customer service (Nickles et al., 2016).

ERP is identified as an important platform where companies are building upgrades of their competitive business processes (M. Munir Achmad and Ruben Pinedo Cuenca, 2013). According to Davenport in Achmad and Cuenca (2013), ERP solutions are designed to solve information fragmentation in large business organizations and integrate all information flowing within the company. Therefore, integrated systems such as ERP behave like an organization's nervous system, with data that resembles nerve impulses. So, if the nerve impulse is not correct, then the response from the functional area will be inaccurate.

As stated by Rouse (2018), that SAP ERP Central Component (SAP ECC) is an enterprise resource planning (ERP) system in what is commonly called only "SAP ERP" CC software that integrates digital information created in one business area with data from other areas of the same business in real-time. This means that if there is an update on one area of business, such as sales, this will trigger an update of information in other related fields such as inventory. Having an integrated view of company resources enables managers to make data-based decisions that optimize core business processes.

As stated by Arvidsson and Kojic (2017) that a collection of studies on critical success factors (CSF: critical successful factors) in ERP implementation has important consequences. Where most academic efforts have been incorporated into understanding the determinants of success from a management perspective. That is preventing the failure of an ERP implementation project that is focused on the decision-making process of top management and how senior executives rank the

importance of CSF and look at the perceptions of people who work with ERP systems, namely its users. Below are critical success factors are used in this research:

1. **Support of top management**. This concept refers to the need to have committed leadership at the top management level. Successful ERP implementation relies heavily on the involvement of active and persistent top management, and the importance of the support of top management at every step at all levels of the company is very important. Top management needs to be active in the implementation process and ensure progress and ultimately success. Another thing that must be done by top management is being able to anticipate potential disruptions.
   The hypothesis (H1) is Support of top management has a positive and significant effect on the successful implementation of the ERP system.

2. **Contribution of project management**. Good project management is very important in an ERP implementation project. Project management activities cover the first four stages of the ERP life cycle from the start of the project to completion. Therefore, the scope must be defined, clearly defined and limited. Because ERP projects tend to be large and complex, because of the combination of extensive hardware and software and countless organizational, human and political problems. The scope of projects that are too broad or ambitious can cause problems.
   The hypothesis (H2) is the Contribution of management projects has a positive and significant effect on the successful implementation of the ERP system.

3. **Implementation of education and training**. Lack of training for users and misunderstanding of the application are two big reasons that affect many failures of ERP implementation. ERP implementation requires a large amount of knowledge to enable people to solve problems that might occur within the system framework.
   The hypothesis (H3) is Implementation of education and training has a positive and significant effect on the successful implementation of the ERP system.

4. **User involvement**. Users are often afraid that ERP implementation will change their roles, job status, interests, responsibilities, and access to valuable information. So, it is important to involve users during system development, gaining existing knowledge from users in areas where the team has inadequate expertise.
   The hypothesis (H4) is User involvement has a positive and significant effect on the successful implementation of the ERP system.

Framework Critical Success Factors

The framework for critical success factors as a determinant of the success of ERP system implementation in this research can be seen in figure 1.

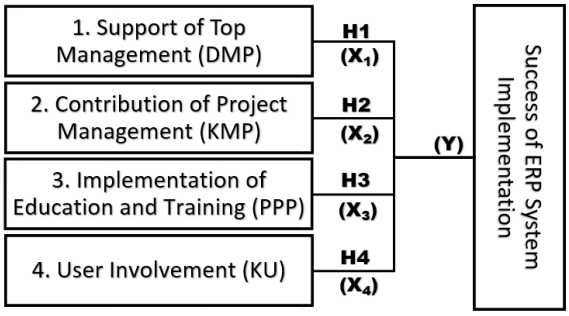

Figure 1. Framework of Critical Success Factors
Source: Author (2018)

METHODS

Research conducted using a type of descriptive quantitative research. Data obtained from a sample of the population were analyzed based on the applying statistical method. The purpose of descriptive research is to provide an overview of the four critical success factors consisting of support

of top management, the contribution of project management, implementation of education and training, and user involvement to have an impact on the successful implementation of SAP ERP CC 6 HANA.

This research utilizes survey data through questionnaires to determine the perceptions of each individual who uses an ERP system in daily activities within the company. The descriptive method is intended to describe of the role and contribution to the four critical success factors in supporting the successful implementation of ERP systems. While the quantitative method is used to provide validation on the research model compiled, namely the influence of causality relationships between the variables studied with hypothesis testing built.

The operational definitions of the variables to be used refer to the results of research conducted by Arvidsson and Kojic (2017).

1) Support of Top Management

The operational definition of support of top management in Arvidsson and Kojic (2017) is the involvement of top management in providing time to follow each step of the implementation to ensure the project runs well and avoids mistakes, provides resource requirements in implementing ERP systems. These things are measured by the knowledge in the form of commitment, support, and involvement.

For the dimensions of its commitment is to provide adequate direction and attention to the implementation of ERP systems (Rabba'i, 2016). The dimensions of commitment are the provision of resources such as human resources, time and funds (Leyh, 2014). Furthermore, the dimension of involvement is to provide time to participate in periodic evaluation activities and participate in solving problems that occur during implementation (Supramaniam and Kuppusamy, 2011).

From the above dimensions, five indicators are determined, namely: (1) Providing adequate attention during implementation, (2) Providing support for the provision of resources for implementation, (3) Providing support at each stage of the implementation process, (4) Participating in advising implementation activities, (5) Participating in solving problems during the implementation process.

2) Contribution of Project Management

The operational definition of effective project management in Arvidsson and Kojic (2017) is knowledge about implementation planning by coordinating with project members and being able to control project activities in meeting project requirements. These things are measured by the implementation of planning, coordination in the project team and control of project activities.

For the planning dimension, it is the ability of project management to make plans, target completion times and choose reliable project leaders (Villari and Jharkharia, 2015). For the coordination, dimension is the ability of project management to carry out coordination activities such as meetings, reporting to top management (Supramaniam and Kuppusamy, 2011). For the control, dimension is the ability of project management to control each implementation process, the activity of the consultant (Fahmi, 2018).

From the above dimensions, seven indicators are determined, namely (1) Making a plan for implementation, (2) Making an implementation plan, (3) Determining a reliable project manager, (4) Coordinating all team members effectively, (5) Holding evaluation meetings, (6) Report the progress of the project to top management, (7) Control the stages of the implementation process.

3) Implementation of Education dan Training

The operational definition of implementation of education and training in Arvidsson and Kojic (2017) is to provide appropriate training on the concepts and logic of ERP systems and the presence of external consultants to convey knowledge to users. These things are measured by providing an understanding of the concepts and logic of ERP systems, training on ERP system applications and providing training materials.

For the dimensions of understanding the concepts and logic of ERP systems is the ability to convey the concepts and logic of ERP systems for users or top management (Arvidsson and Kojic, 2017). For the dimensions of training and education is the ability of the consultant to provide training in various functions using modules in the system (Tobie and Etoundi, 2016). For the dimensions of the training material, there are modules for education in languages that are easy to understand (Villari and Jharkharia, 2015).

From the above dimensions, seven indicators are determined, namely (1) It can convey understanding of the concepts and logic of ERP systems, (2) Training is carried out by external consultants, (3) Training is separated based on user functions, (4) Education and training using simulation modules ERP system applications, (5) Modules for education and training are provided by external consultants, (6) Educational and training materials use easy-to-understand language, (7) Training and education modules are separated by department.

4) User Involvement

The operational definition of user involvement in Arvidsson and Kojic (2017) is to participate in the establishment, development, and implementation of ERP systems. These things are measured by the entry of users as project members and user involvement in each phase of the project.

For the dimensions of being a member of the project, the users involved in implementing the ERP system are listed in the project organization (AlQashami and Mohammad, 2015). For dimensions of user involvement in each phase of the project are involved in the establishment and development of ERP systems and always follow each meeting in the development process as resource persons who currently know the existing business flow (Alsabaawi, 2015).

From the above dimensions, four indicators are determined, namely (1) The existence of a project organizational structure that establishes users as one member of the project, (2) Users are always invited and attend meetings before the implementation process to ensure that the ERP system is in line with existing business flow, (3) Users are always present in ERP system training and education activities, (4) Users always use all modules according to their functions after the implementation process, (5) Users actively and continuously inform when there are difficulties and errors in process.

5) Successful Implementation of ERP System at PT. EDS Manufacturing Indonesia

The operational definition of successful ERP implementation in Arvidsson and Kojic (2017) is an increase in the achievement of work productivity and a decrease in the level of work errors as measured by the perception of ERP users. These things can be measured by the quality of the system and the quality of information.

The operational definition of successful ERP implementation in Arvidsson and Kojic (2017) is an increase in the achievement of work productivity and a decrease in the level of work errors as measured by the perception of ERP users. These things can be measured by the quality of the system and the quality of information.

For the dimensions of the system, quality is the successful implementation of ERP systems by reducing the level of work errors and increasing accuracy in work (Fahmi, 2018). For the dimensions of information, quality is the successful implementation of ERP systems to improve coordination between parts (Nijher, 2016).

From the above dimensions, four indicators are determined, namely (1) Reducing the level of error in work transactions, (2) Increasing work accuracy, (3) Improving coordination between departments, (4) Reducing the cycle time of work transactions, (5) Increasing employee work productivity.

Population and Sample

The population of this research was 5557 employees of PT. EDS Manufacturing Indonesia. The sampling technique used in this research is the Purposive Sampling technique. Samples are aimed at various strata in companies that are actively involved in the implementation and use of ERP system

that have a role as key users (are people who act as implementers of ERP systems) and end-users (are people who act as users of ERP system) as a whole totaling 59 people.

In this research, researchers used a questionnaire as a tool to collect primary data from respondents. The questionnaire is in this research adopted the questionnaire Arvidsson and Kojic (2017) with adjustments by the authors. The questionnaire is in this research used closed questions with a Likert scale and was directly given to the data source. Respondents will be asked to choose the SS response (Strongly Agree) with a score of 5, S (Agree) with a score of 4, N (Neutral) with a score of 3, TS (Disagree) with a score of 2, or STS (Strongly Disagree) with a score of 1.

The method of data analysis is done with descriptive and quantitative analysis. Descriptive analysis aims to describe the role and contribution of the four critical success factors in influencing the success of ERP system implementation. This analysis uses descriptive data from the results of the research and the calculation of the range of criteria and the scale range of item values to the respondents' answers obtained from the questionnaire.

Data and Analysis

After that, a quantitative analysis is carried out where an analysis uses measurements involving some specific units or expressed by numbers. Quantitative analysis methods are carried out using the IBM SPSS Statistics version 22 program (hereinafter referred to as SPSS) by testing the validity, reliability test, multiple linear regression analysis, and hypothesis testing.

A validity test is used to determine the feasibility of the items in a questionnaire in defining a variable. This list of statements generally supports a certain group of variables. Valid data will be obtained from a valid instrument. To test the validity of the instrument, researchers used the Bivariate Pearson correlation (Pearson Moment Products) with the help of SPSS.

While reliability is a measure of the stability of the respondent in answering things related to constructs of questions which are dimensions of a variable and arranged in the form of a questionnaire. Reliability testing shows the accuracy, exactness, and consistency of the questionnaire in measuring variables. The research tested the reliability of the instrument using the Alpha reliability correlation coefficient (Cronbach's Alpha). The Instrument can be said to be reliable if the alpha value is greater than the r critical product moment.

Multiple linear regression equation is a linear regression where the dependent variable (Y variable) is associated with two or more independent variables (variable X). The multiple linear regression equation is as follows:

$$\mathbf{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + e}$$

Notes:
Y = Dependent Variable
α = Constant (value of Y if X_1, X_2, …, X_n = 0)
β = Regression Coefficient
X = Independent Variable
n = 1, 2, 3, …, n
e = Error

Multiple correlation analysis (R) is used to determine the relationship between two or more independent variables on the dependent variable simultaneously. While the determination analysis is used to determine the percentage of contributions of the influence of independent variables simultaneously on the dependent variable.

In this research, multiple regression analysis will be used to see how far factors: support of top management, the contribution of project management, implementation of education and training, user involvement affects the success of ERP System implementation at PT. EDS Manufacturing Indonesia. The analysis used to test this hypothesis is multiple linear regression analysis, with the regression model as follows:

$$\mathbf{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e}$$

Notes:
Y = The success of ERP System implementation
α = Constant
β_1, β_2, β_3, β_4 = Regression Coefficient
X_1 = Support of top management variable
X_2 = Contribution of project management variable
X_3 = Implementation of education and training variable
X_4 = User involvement variable
e = Error

To test the hypothesis, the Regression Coefficient Test was simultaneously used (F_{-test}) and Partially Regression Coefficient Test (t_{-test}). The F test is used to test the significance of the relationship of two or more independent variables simultaneously to the dependent variable. The t_{-test} is used to test the significance of the relationship between two variables between interval/ratio variables and interval/ratio variables that involve the relationship of more than two variables by setting variables that are not measured.

The research was conducted based on the steps of the framework as follows:

1) Formulate research problems, namely whether support of top management, the contribution of project management, implementation of education and training, and user involvement affect on the successful implementation of SAP ERP CC 6 HANA at PT. EDS Manufacturing Indonesia.
2) Conduct literature studies from previous studies to determine the critical success factors for the successful implementation of SAP ERP CC 6 HANA at PT. EDS Manufacturing Indonesia. Also, field observations were conducted at the research site.
3) Determine the operational variables, dimensions, and indicators of the four critical success factors that are considered to influence the successful implementation of SAP ERP CC 6 HANA at PT. EDS Manufacturing Indonesia.
4) Conduct distribution questionnaires to selected respondents to provide an assessment of the indicators of operational variables that have been predetermined.
5) Weighting the results of the questionnaire is continued by conducting various tests and carrying out the final analysis of the results of the distributed questionnaire.
6) Conduct analysis and make conclusions and recommendations (if needed) as the final results of the research.

RESULTS and DISCUSSION

The demographic profile of the respondents is related to work unit factors, position, education, age, and gender. In terms of work unit factors, the majority of respondents are in the Finance work unit, which are as many as 16 people or 27% of the total respondents. In terms of position factors, the majority of respondents are staff, which are as many as 25 people or 42% of the total respondents. In terms of educational factors, the majority of respondents have the same level of education as high school, which are as many as 25 people or 42% of the total respondents. And in terms of age, the majority of respondents have an age range above 40 years, which are as many as 26 people or 44% of the total respondents. As well as from the side of gender factors, the majority of respondents are male gender, which are as many as 31 people or 53% of the total respondents.

Validity testing is to determine the level of accuracy of the instrument to collect research data. The form of testing carried out is to find out whether all statements (instruments) submitted in the questionnaire to measure research variables are valid.

To test the validity in this research calculated by a computer using SPSS to obtain a correlation value (r_{count}). If the r_{count} is greater than r_{table}, then the statement (instrument) is valid. If r_{count} is smaller than r_{table}, then the statement (instrument) is invalid. The r_{tabel} value is 0.2564. While r_{count} is seen in the Pearson Correlation section on the results of SPSS calculations.

Based on the results of the validity test, the results obtained from the 5 items related to the support of top management variables in the instrument are concluded as valid statements. Because each statement has a Pearson Correlation of 0.819, 0.821, 0.809, 0.759 and 0.715. Where these values are greater than 0.2564. Besides, the significance of the SPSS calculation results is all below

0.05. Based on the results of the validity test, the results obtained from the 7 items related to the contribution of the project management variable in the instrument are concluded as valid statements. Because each statement has a Pearson Correlation of 0.848, 0.738, 0.792, 0.726, 0.687, 0.764, and 0.818. Where these values are greater than 0.2564. Besides, the significance of the SPSS calculation results is all below 0.05. Based on the results of the validity test, the results show that from the 7 items related to the implementation of education and training variables in the instrument it is concluded as a valid statement. Because each statement has Pearson Correlation of 0.708, 0.635, 0.693, 0.706, 0.672, 0.623 and 0.678. Where these values are greater than 0.2564. Besides, the significance of the SPSS calculation results is all below 0.05. Based on the results of the validity test, the results obtained from the 5 items related to user involvement variables in the instrument are concluded as valid statements. Because each statement has a Pearson Correlation of 0.708, 0.817, 0.840, 0.852 and 0.593. Where these values are greater than 0.2564. Besides, the significance of the SPSS calculation results is all below 0.05. Based on the results of the validity test, the results obtained from the 5 items related to the success of the ERP implementation system in the instrument are concluded as valid statements. Because each statement has a Pearson Correlation of 0.890, 0.734, 0.735, 0.745 and 0.804. Where these values are greater than 0.2564. Besides, the significance of the SPSS calculation results is all below 0.05. Thus, testing the instrument validity in the form of a questionnaire can be said to have a valid level of accuracy for collecting research data.

Reliability testing is used to determine the consistency or stability of the instrument that the instrument is reliable and consistent if repeated measurements are made. In this reliability test, SPSS is used with the alpha reliability coefficient (Cronbach's Alpha) method. The significance test is carried out at 0.05 significance level, meaning that the instrument can be said to be reliable if the alpha value is greater than the r critical product moment. According to Priyatno (2014: 64) that if less than 0.6 the reliability is less. While 0.7 is acceptable and above 0.8 is said to be good. In this case, the researcher determines to use the critical product-moment r of 0.7. From the results of the calculation obtained the results as illustrated in Table 1.

Table 1. Reliability Test

VARIABLE	CRONBACH'S ALPHA	N OF ITEMS	Standard Value	Conclusion
Support of Top Management (DMP)	.8410333773335850	5	0.7	**Reliable**
Contribution of Project Management (KMP)	.8836183602670680	7	0.7	**Reliable**
Implementation of Education and Training (PPP)	.7909617050039030	7	0.7	**Reliable**
User Involvement (KU)	.8209785025945150	5	0.7	**Reliable**
Success of ERP System Implementation (KIS)	.8386400986031220	5	0.7	**Reliable**

Source: Results of Primary Data Processing (2019)

Then, it can be said that the instrument in the form of a questionnaire can be said to have a high level of reliability and consistency, so it is reliable to collect research data. So, the questionnaire is feasible to be distributed to respondents and the generated data can be used further in this research. Based on the results of data processing carried out using SPSS assistance as in Table 2.

Table 2. Coefficient of Multiple Linear Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.568	3.705		.693	.491
	TOTAL_DMP	.082	.225	.065	.365	.717
	TOTAL_KMP	.431	.160	.457	2.698	.009
	TOTAL_PPP	.158	.163	.152	.974	.334
	TOTAL_KU	-.119	.217	-.089	-.548	.586

a. Dependent Variable: TOTAL_KIS

Source: Results of Primary Data Processing (2019)

Based on Table 2. Multiple Linear Regression equations can be formed as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

$$Y = 2.568 + 0.082 X_1 + 0.431 X_2 + 0.158 X_3 - 0.119 X_4$$

Notes:
Y = Success of ERP system implementation variable (TOTAL_KIS)
α = Constant
β_1, β_2, β_3, β_4 = Regression Coefficient
X_1 = Support of top management variable (TOTAL_DMP)
X_2 = Contribution of project management (TOTAL_KMP)
X_3 = Implementation of education and training variable (TOTAL_PPP)
X_4 = User involvement variable (TOTAL_KU)

The interpretation of the resulting multiple linear regression equation can be explained as follows:

1) From the regression equation above it can be seen that the effect of Support of Top Management on the Success of ERP System Implementation is positive. This is shown in the regression coefficient or the value of **β_1** in the regression equation which shows a positive number of 0.082 which implies that every increase in Support of Top Management variable will be followed by an increase in the Success of ERP System Implementation of 0.082. Likewise, vice versa, if the Support of Top Management variable decreases, the Success of ERP System Implementation will also decrease by 0.082.
2) From the regression equation above it can be seen that the effect of Contribution of Project Management on the Success of ERP System Implementation is positive. This is shown in the regression coefficient or **β_2** value in the regression equation which shows a positive number of 0.431 which implies that every increase in Contribution of Project Management variable will be followed by an increase in the Success of ERP System Implementation of 0.431. Likewise, vice versa, if the Contribution of the Project Management variable decreases, the Success of ERP System Implementation will also decrease by 0.431.
3) From the regression equation above, it can be seen that the effect of Implementation of Education and Training on the Success of ERP System Implementation is positive. This is shown in the regression coefficient or value of **β_3** in the regression equation which shows a positive number of 0.158 which implies that every increase in Implementation of Education and Training variable will be followed by an increase in the Success of ERP System Implementation of 0.158. Likewise, vice versa, if the Implementation of the Education and Training variable decreases, the Success of ERP System Implementation will also decrease by 0.158.
4) From the regression equation above it can be seen that the influence of User Involvement on the Success of ERP System Implementation is negative. This is shown in the regression coefficient or **β_4** value in the regression equation which shows a negative number of 0.119 which implies that every increase in the User Involvement variable will be followed by a decrease in the Success of the ERP System Implementation of 0.119. Likewise, vice versa, if the User Involvement variable decreases, the Success of ERP System Implementation will also increase by 0.119.
5) The **α** (constant) coefficient value of 2.568 means if there are no variables of Support of Top Management, Contribution of Project Management, Implementation of Education and Training, and User Involvement (where X_1, X_2, X_3, X_4 = 0), it is estimated that the success of Implementation Success The ERP system is 2,568, because of the influence of other variables not discussed in this research.

The t test for each variable in succession is explained as follows. The t test for **Support of Top Management variable to Success of ERP System Implementation** can be explained as follows. From the results of data processing using SPSS in Table 2. above, it is known that t_{count} = 0.365. While the value of t_{table} = 2.00488. So, it was concluded that t_{count} (0.365) < t_{table} (2.00488) and significance (0.717)> 0.05 or H_0 failed to be rejected. This means that Support of Top Management does not have a significant influence on the Success of ERP System Implementation. The t_{-test} for **Contribution of**

Project Management to Success of ERP System Implementation can be explained as follows. From the results of data processing using SPSS in Table 2. above, it is known that t_{count} = 2.698. While the value of t_{table} = 2.00488. So, it can be concluded that t_{count} (2.698)> t_{table} (2.00488) and significant (0.009) <0.05 or H_0 is rejected. This means that Contribution of Project Management has a significant influence on the Success of ERP System Implementation. The t_{-test} for **Implementation Education & Training Implementation to Success of ERP System Implementation** can be explained as follows. From the results of data processing using SPSS in Table 2. above, it is known that t_{count} = 0.974. While the value of t_{table} = 2.00488. So, it was concluded that t_{count} (0.974) <t_{table} (2.00488) and significance (0.334)> 0.05 or H_0 failed to be rejected. This means that the Implementation Education & Training variables do not have a significant influence on the Success of ERP System Implementation. The t test for **User Involvement to Success of ERP System Implementation** can be explained as follows. From the results of processing data using SPSS in Table 2. above, we know the value of t_{count} =-0.548. While the value of t_{table} = 2.00488. So, it was concluded that t_{count} (0.548) <t_{table} (2.00488) and significance (0.586)> 0.05 or H_0 failed to be rejected. This means that User Involvement variables do not have a significant influence on the Success of ERP System Implementation.

The F_{-test} Results in Table 3. Below is several 6,071 with a significance level of 0.000. Because the 0.000 significance number is less than 0.05, the Multiple Linear Regression model can be used to predict the Success of ERP System Implementation.

Table 3. Coefficient of Multiple Linear Regression (ANOVA)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	179.158	4	44.790	6.071	.000[b]
	Residual	398.401	54	7.378		
	Total	577.559	58			

a. Dependent Variable: TOTAL_KIS

b. Predictors: (Constant), TOTAL_KU, TOTAL_KMP, TOTAL_PPP, TOTAL_DMK

Source: Results of Primary Data Processing (2019)

In other words, Support of Top Management, Contributions of Project Management, Implementation of Education and Training, and User Involvement together influence the Success of ERP System Implementation. With the condition of the regression model that can be used to predict the dependent variable, a significance number smaller than 0.05 is needed. From the results of data processing using SPSS in Table 3. above it is known that the magnitude of F_{-count} = 6,071. When compared with the value of F_{-table} by using a 0.05 probability is 2.54. Then it can be seen that F_{-count} (6,071)> F_{-table} (2.54) or H_0 is rejected. It can be interpreted that simultaneously there is a linear relationship between the variables of Support of Top Management, Contribution of Project Management, Implementation of Education and Training, and User Involvement with the Successful ERP System Implementation variable. It can be concluded that the variables of Support of Top Management, Contributions of Project Management, Implementation of Education and Training, and User Involvement simultaneously influence significantly the Successful ERP System Implementation variables.

In Table 4. below shows the magnitude of the coefficient of determination which functions to determine the percentage of the dependent variable, namely the Success of ERP System Implementation, which can be predicted using independent variables, namely Support of Top Management, Contributions of Project Management, Implementation of Education and Training, and User Involvement.

Table 4. Determination Coefficient

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.557[a]	.310	.259	2.71621

a. Predictors: (Constant), TOTAL_KU, TOTAL_KMP, TOTAL_PPP, TOTAL_DMP

Source: Results of Primary Data Processing (2019)

It is known that the number R is the correlation value or the value of the relationship between Support of Top Management, Contribution of Project Management, Implementation of Education and Training, and User Involvement with the Success of ERP System Implementation, namely 0.557. This means that there is a close relationship because it is close to 1. While the R Square number (correlation number or r squared) is 0.310. The R Square number is also called the coefficient of determination. The magnitude of the coefficient of determination is 0.310 or equal to 31.0%. This figure can be interpreted that all independent variables consisting of Support of Top Management, Contributions of Project Management, Implementation of Education and Training and User Involvement can explain the relevance of the dependent variable, namely the Success of ERP System Implementation of 31.0%. While the remaining 69.0% is explained by other variables not discussed in this research.

Discussion

Affecting of Support of Top Management

Based on Table 2 which describes the results of $t\text{-}_{test}$ and significance value, namely in the $t\text{-}_{test}$ obtained $t\text{-}_{count}$ of 0.365 and Sig. amounting to 0.717. Because the value of t_{count} is less than the t_{table} value of 2.00488 and Sig. more than 0.05, **the first hypothesis is not fulfilled**. Although in other similar studies conclusions are stating that there is an influence of Support of Top Management to the success of ERP system implementation, but in the research conducted this time, respondents consider this variable does not have effect.

The failure of this hypothesis is possible because of the Support of Top Management that is not directly felt by respondents who act as end users. Usually Support of Top Management is only seen in discussions and meetings with key users such as decisions related to the provision of resources, involved in solving problems that can hinder the implementation process. So, the perception of end users and key users of Support of Top Management is different. Considering the number of end user respondents is 41 while the number of key user respondents is 29. So that Support of Top Management does not significantly influence the implementation of ERP systems.

Affecting of Contribution of Project Management

Based on Table 2 which describes the results of the $t\text{-}^{test}$ and the significance value, namely in the t test obtained $t\text{-}_{count}$ of 2.698 and Sig. amounting to 0.009. Because the value of $t\text{-}_{count}$ is more than the t_{table} of 2.00488 and Sig. less than 0.05, then **the second hypothesis is fulfilled**. This result supports another similar research. The respondents consider that the contribution of project management was needed to support the success of ERP system implementation.

The fulfillment of this hypothesis is possible because the Contribution of Project Management is felt by key users and end users which are described by the number of interactions that are carried out. This is because members of project management often interact especially at the beginning when implementation will take place. Not limited to the key user but also on the end-user. Then the key user and end user have the same perception related that Contributions of Project Management in the implementation of ERP systems are considered to have a significant effect.

Affecting of Implementation of Education and Training

Based on Table 2 which describes the results of the t test and significance value, namely in the t test obtained t_{count} of 0.974 and Sig. amounting to 0.334. Because the value of t_{count} is less than the t_{table} value of 2.00488 and Sig. more than 0.05, then **the third hypothesis is not fulfilled**. Although in other similar researches there are conclusions stating that there is an influence of implementation of education and training to the success of ERP system implementation, in the research conducted this time, respondents consider this variable does not affect.

The failure to fulfill this hypothesis is possible because the conditions of system complexity are more complicated than the existing systems. Of course, because new respondents are in the new six-month period since it was launched as a new system. In addition, the training was provided by consultants where the material presented was material based on standards not on best practice so it seemed long and long even though the training was based on user functions and separated according to section / department. So that the key user and end-user have the same perception regarding the Implementation of Education and Training in the implementation of ERP systems so that they are considered it does not have a significant effect.

Affecting of User Involvement

Based on Table 2 which describes the results of the t_{-test} and the significance value, namely in the t_{-test} obtained t_{count} of –0.548 and Sig. amounting to 0.586. Because the value of t_{count} is less than the t_{table} value of 2.00488 and Sig. more than 0.05, then **the fourth hypothesis is not fulfilled**. Although in other similar researches there are conclusions stating that there is an influence of User Involvement to the success of ERP system implementation, but in the research conducted this time, respondents consider this variable does not have effect.

The failure of this hypothesis is possible because there is a tendency for the end-user to reject each new system that will be applied. In addition, it is possible that there is still a lack of understanding from end users regarding the benefits of ERP systems, considering that they are the most respondents and are still in a new time frame (6 months) since they were implemented. In fact, they do not directly provide input if they encounter problems, but instead provide the perception that the system is no better than the current system. So that key users and end users have the same perception related to User Involvement in the implementation of ERP systems which considered it does not have a significant effect and tends to decrease the success rate of implementing ERP systems when increasingly involved.

CONCLUSION

The success of ERP system implementation must be pursued because in some of the results of previous research that has been done can be obtained data, including that Nijher (2016) argues that the researchers estimate that 90% of ERP implementations are delivered late or more than the company's budget and activity shows 67% failure rate in achieving goals and are considered negative or unsuccessful.

In mid-2016 the management of the company PT. EDS Manufacturing Indonesia decided to implement an ERP system to integrate information. The ERP system implementation process is scheduled for 2 (two) years, from the kick off project to being able to go live that has been running since July 2018 until now. Based on these conditions, this research was conducted to look at four critical success factors namely Support of Top Management, Contribution of Project Management, Implementation of Education and Training, and User Involvement on the success of ERP system implementation at PT. EDS Manufacturing Indonesia.

Of the four critical factors, which gives a significant influence on the success of ERP system implementation is the Contribution of Project Management. While the other three factors, such as Support of Top Management, Implementation of Education and Training, and User Involvement did not significantly influence the success of ERP system implementation. Even User Involvement variable tend to have an impact tendency can decrease the success rate of ERP system implementation when increasingly involved.

It is expected that with the results of this research, give an overview to top management if they want to repeat the success of implementing ERP systems at PT. EDS Manufacturing Indonesia in

other companies in a group is to increase the value of the variable score of Contributions of Project Management. Increasing the score score on the Contribution of Project Management variable can be done by paying attention to the dimensions that have been built which can be seen as success by observing the indicators of each dimension. And to eliminate the negative influence of User Involvement variable, it is recommended that key users and end users be involved in meetings before the implementation process to ensure that the ERP system is understood to be in line with the existing business flow.

With all the limitations in this research, such as concerning the characteristics and number of respondents, as well as the period of the questionnaire which is still in the six-month period of implementation. This research is still not perfect so that it can still be developed in other forms of research, by adding other factors as stated in previous studies. Based on the contribution of the independent variable to the model built, it can be seen that there are still 69% of other factors which might influence the success of ERP system implementation which can be used as a reference in subsequent research.

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