INTERNATIONAL HUMANITIES and APPLIED SCIENCES JOURNAL (IHASJ)
e-ISSN 2622-5808; p-ISSN 2655-6553, Volume 3, Issue 1, January 2020

10.22441/ihasj.2020.v3i1.02

FACTORS AFFECTING SUCCESS OF ERP (ENTERPRISE RESOURCE PLANNING) SYSTEM IMPLEMENTATION

Elyus Dwi Erwanto[1], Hasmand Zusi[2]
[12]Study Program Management, Faculty of Economics and Business, Universitas Mercu Buana
Jl. Meruya Selatan, Jakarta
elyus.dwierwanto@gmail.com, hasmandgindo@yahoo.com

Abstract *– This study aimed to determine the factors that influence the successful (critical success factors) of ERP implementation in the company's client PT. Artsys Integrasi Solusindo. The data used are primary data using questionnaires from respondents. This research was conducted on 13 companies that have implemented ERP, with 80 respondents being used as samples. The sampling method in this study uses non-probability sampling with a quota sampling technique based on criteria. The analytical tool used in this study is regression analysis. The research hypothesis testing was completed using t-test, F-test and descriptive analysis. The results of this study indicate that Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, and Adequate Budget are factors that influence the success of ERP implementation. While the factor of Education in an ERP project does not have a significant effect. But simultaneously, the six factors can explain the relation to the success of ERP implementation with the R-square value of 67.6%. With this research, it is expected that ERP consultants and implementers and the companies that are currently and will implement ERP to pay attention and prepare well the factors that determine the success of ERP implementation.*

Keywords: *ERP implementation; enterprise resource planning; critical success factors*

INTRODUCTION

Many companies are currently running their business processes using computer-based software applications at the operational level. It is commonly found in many places, computer applications are the backbone of the company in carrying out its business processes. The demands for implementing integrated business process applications between departments/divisions are increasing. This integrated business application is known as an ERP (Enterprise Resource Planning) application (Sandy, 2016).

ERP has evolved as an integration tool, to integrate all company applications or company core activities which include sales and marketing, maintenance, production/manufacturing, procurement/logistics, warehouse, human resources, general parts, and finance to data storage centers (servers) and can be easily accessed by all working units in need (Toruan, 2013).

The success rate of ERP system implementation is currently considered low and many companies have implemented ERP systems but still have not utilized the potential of the overall ERP system in their organizations (Tjakrawala, 2012). The failure rate of information technology projects is reported to range between 30% -70% (Krigsman, 2010).

PT. Artsys Integration Solusindo is one of the consultants and implementers of ERP systems with the Odoo brand in Indonesia. PT Artsys Integrasi Solusindo was established in 2015 and currently has successfully assisted the implementation of ERP systems in several client companies. ERP system implementation is carried out by PT. Artsys Solusindo integration does not always run smoothly. Company data shows that the failure rate of ERP implementation reached 23% from 2015 - 2018. This failure is indicated by several indications such as the delay in go-live time from planning, the cost that swelled from the initial budget, and the achievement that was less than the KPI targets that have been set.

The low level of success in implementing ERP systems and a large number of critical success factors in ERP implementation are very broad to be used as a guide that is meaningful and useful for ERP system implementation, which makes the author interested in researching this matter.

Research on the critical success factors in the implementation of ERP systems currently is still very limited, especially in Indonesia and most of the previous studies only define the critical success factors in the form of survey results but did not explain in detail the effect of these factors on the successful implementation of the ERP system.

Based on the description above, motivate the author to research ERP system implementation. This study uses variables of Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in ERP projects as independent variables and Successful ERP Implementation as the dependent variable. The ERP system that will be raised in this study is the Odoo System. This research was conducted on 13 client companies of PT. Artsys Integrasi Solusindo which has implemented ERP as an object of research.

The research questions that will be examined are whether the factors of Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget and Education in the ERP project influences the success of ERP implementation and whether the factors mentioned above simultaneously influence the success of ERP implementation.

LITERATURE REVIEW

Enterprise Resources Planning (ERP)

In a complex organization with many departments that carry out their functions and objectives, often occur a difference in information, perception and decision making between one department unit and another unit. ERP is a concept, technique, or method to integrate all departments and functions of a company into a system of automating the entire business process to increase the effectiveness and efficiency of the company. The benefits of ERP are the integration of the business as a whole, flexibility in the organization to transform and increase its turnover, create better analysis and capability improvements, and use of the latest technology (Tarigan *et al,* 2013).

In ERP itself, there is a paradigm shift from a completely isolated conventional system towards the use of more integrated information technology, resulting in a more smooth flow of information at organizational and departmental levels, such as Sales & Distribution, Maintenance Management, Logistics Management, Human Resources, Finance, Strategic & Operational Planning, Manufacturing, Material Management, Quality Management in two directions to the ERP system, as shown in Fig. 1 below:

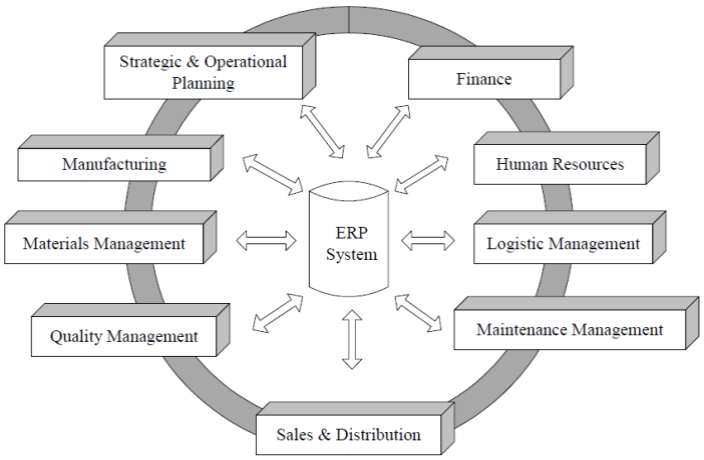

Figure 1. Information Integration through an ERP System
Source: Tarigan *et al,* (2013)

Critical Success Factors

According to Tripomo (2005), critical success factors are the most critical or the most important internal organizational factors, which may be used by an organization in an industry as the main tool to deal with opportunities and threats to survive and win the competition. Critical success factors are a set of critical factors or activities needed to ensure the success of a business. Also, the critical success factors are defined as an element in the organization's activities that are the center of the success of the organization in the future. Critical success factors can be said to be aspects of a business that is important to achieve or maintain (Jaluanto & Devitayani, 2015). The following is an explanation of the critical success factors used in this study:

1. Change Management

Nah, *et al.* (2007) emphasize the importance of change management, starting in the project phase and continuing throughout the entire life cycle. Extensive corporate culture and structure must be managed, this includes people, organizations and cultural change (Nah, *et al.* 2007; Davenport, 2000; Legare, 2002).

Changes can occur at the technical level and the strategic level. This change can involve people, organizations, and also the culture of individuals and companies (Falkowski, *et al.* 1998). Changes at the technical level, for example, related to changes in work equipment from the one that was manual with paperwork turned into electronics with computers. At a higher level, changes can occur from business processes with multilevel approval, which becomes much less with the help of formulating calculations by ERP. It turns out that change management contributes greatly to the success or failure of ERP.

***H_1**: Change Management affects the success of ERP implementation*

2. Project Management

According to Kerzner (2004), a project is an order that has a series of objectives, which are contained in the consumption of resources, which are held within the limits of time, cost, and predetermined quality standards. As a large-scale project that involves so many people and structures, ERP implementation must be well escorted in project management. Project management is needed to ensure that the ERP implementation can run well.

Haming and Nurnajamuddin (2011) stated that project management is an activity to plan, organize, lead, and control company resources to achieve the short-term targets that have been determined by using a system and hierarchical approach, both vertical and horizontal. Project management includes work scheduling activities, provision of HR, determination of the scope of the project and its deliverables, to the process of mitigating the risk of project failure due to scarcity of resources, misinformation, weak commitment, and other causes of failure. In increasing the success of ERP implementation, an effective project management strategy is needed to control it so that it is expected to avoid costs that exceed the larger budget and ensure the implementation time by the estimated schedule at the beginning.

***H_2**: Project Management affects the success of ERP implementation*

3. Top Management Sponsorship

As a very costly project, involving many stakeholders, requiring frequent massive change management, direct and continuous involvement of top management of the company is one of the keys to the success of an ERP project. All top management support is needed during the implementation period. The top management of the company must be the vanguard that not only supports but supervises intensively and periodically during the ERP implementation (Summer, 1999).

According to Hartono (2007), top management support is to show the participation and involvement of executives in developing information systems. Top management support has been identified as the most important success factor in an ERP system implementation project. Top management must be able to create an awareness in the form of guidance and direction that the success of ERP implementation will be able to increase the effectiveness of the company and facilitate an organization to achieve its goals (Winahyu, 2005). Leaders have an important role in the formulation, implementation, and evaluation of the Organization's strategy (Nusraningrum, 2018).

***H_3**: Top Management Sponsorship affects the success of ERP implementation*

4. Realistic Scope Setting

Currently, ERP software is sold in the market in packages that contain many modules that are usually needed by companies, including finance, procurement, logistics, payroll, maintenance, human resources, and so on. Often companies are trapped to use as many modules as they can in the package but forget to consider aspects of the organization's ability to run an ERP project (Fitrah, 2010).

Whereas Ross (1999) indicates that agreeing on the correct scope is one of the important factors in achieving successful ERP projects. There are many cases in ERP implementation where the scope is too broad in functional/departmental and regionally (branches) which are run at the same time, have a higher risk of failure.

***H_4**: Realistic Scope Setting affects the success of ERP implementation*

5. Adequate Budget

ERP implementation in many companies since the beginning was recognized as a project with a large investment value (Fitrah, 2010). Therefore, companies that will implement ERP need to prepare an ERP project budget in advance. ERP project components that need to be budgeted plus a budget for purchasing ERP Software, ERP implementation services, and ERP platforms/hardware.

Assuming the initial Local Area Network (LAN) and Wide Area Network (WAN) are available adequately. If it is not yet available, it needs to be budgeted too. ERP software itself is known as expensive software, as well as its implementation services (Nah, *et al.* 2001). But compared to creating ERP software yourself, buying packages that are already available is still more economical. In addition, every year, companies need to budget an ERP maintenance budget whose annual costs can reach 25% of the initial investment (See Pui Ng, *et al.* 2001).

H_5: Adequate Budget affects the success of ERP implementation

6. Education in ERP Projects

In good change management, there are adequate education and training programs. As explained in the previous section, ERP implementation involves many changes at the strategic and technical levels. It is very important to develop a comprehensive education and training program to ensure the dissemination and absorption of ERP material occurs effectively into the organization (Fitrah, 2010).

Education and training refer to the process of preparation for employees and management through explanations of logic and the overall concept of an ERP system (Martinsons and Westwood, 1997). Islam and Tan (2007) argue that adequate training can help increase success for ERP systems. Education and training that must be considered to improve the success of ERP implementation are ERP concepts and logic, direct training, and the availability of simple usage guidelines for trainees (Sum, *et al.* 1997).

***H_6**: Education in ERP Projects affects the success of ERP implementation*

7. Independent factors simultaneously

In this study, it will also be analyzed whether the above independent factors are Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in ERP projects simultaneously also influence the success of ERP system implementation.

***H_7**: Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budge, and Education in ERP Project simultaneously affects the success of ERP implementation*

Theoretical Framework

The following is a description of the logical flow of the framework applied by the authors in this study, as shown in Fig. 2 below:

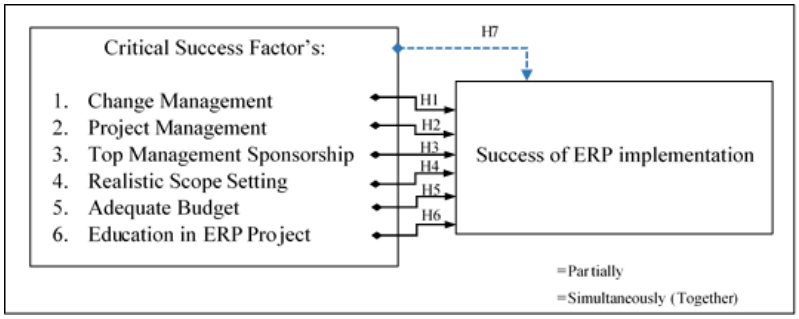

Figure 2. Theoretical Framework
Source: Author (2019)

METHODS

Research Design

Research design is a framework of plans used in conducting research which includes the methods and procedures used to analyze the data obtained to produce the information needed. By considering the type of study and the topics discussed, this study was designed to use quantitative descriptive research.

Research Instruments

The tables below explain the components of each variable formed by its attributes:

Table 1. Change Management and attributes

Independent variable		Attributes/Indicator Variable
Change Management	V1	Awareness building as a component of change management
	V2	Changes in business processes
	V3	Change in organizational structure
	V4	Changes in work culture

Source: Rosario (2000) - published in the journal Business Process Management vol.7 MCB University Press. 2001

Table 2. Project Management and attributes

Independent variable		Attributes/Indicator Variable
Project Management	V5	Control PM to project stakeholder
	V6	PM's ability to understand business needs
	V7	Effective communication in project management
	V8	HR arrangements in project management
	V9	A qualified project manager
	V10	Collaboration between internal PM & external PM

Source: Shanks, *et al*. (2000), published in the journal Database Management vol.18. IGI Publishing, and has been reprocessed by Fitrah (2010)

Table 3. Top Management Sponsorship and attributes

Independent variable		Attributes/Indicator Variable
Top Management Sponsorship	V11	The presence of absolute sponsorship executives
	V12	Executive involvement throughout the project lifecycle
	V13	Engagement in periodic reviews
	V14	The leader as the project owner
	V15	The leader gives incentives to the project

Source: Bingi (1999), Buckhout (1999) Summer (1999) - loaded in journal Business Process Management vol.7 MCB University Press. 2001

Table 4. Realistic Scope Setting and attributes

Independent variable		Attributes/Indicator Variable
Realistic Scope Setting	V16	The Scope must match the ability of the organization
	V17	Setting Go-live dates must be realistic
	V18	Adequacy of HR implementing ERP is needed
	V19	Adoption of templates in ERP software
	V20	Minimum customization

Source: Wee (2000) and has been reprocessed by Fitrah (2010)

Table 5. Adequate Budget and attributes

Independent variable		Attributes/Indicator Variable
Adequate Budget	V21	Adequate to buy quality ERP software
	V22	Adequate to pay for ERP implementation services from reliable consultants
	V23	Adequate to buy the platform/hardware needed
	V24	Adequate for the scope needed
	V25	Adequate to anticipate changes in scope

Source: Fitrah (2010)

Table 6. Education in ERP Project and attributes

Independent variable		Attributes/Indicator Variable
Education in ERP Project	V26	Education is needed from the start
	V27	Managerial label training
	V28	User-level training
	V29	Formal certification is part of the training

Source: Summer (1999), published in the Business Process journal Management vol.7 MCB University Press. 2001

Table 7. The Success of ERP Implementation and attributes

Dependent variable		Attributes/Indicator Variable
The Success of ERP implementation	V30	According to the allocated budget
	V31	As per the specified scope
	V32	As per the specified Go-live date
	V33	Achievement of efficiency
	V34	Achievement of effectiveness
	V35	Achievement of accountability

Source: Nah*, et al.* (2007), and has been reprocessed by Fitrah (2010)

Types and Data Sources

Research data is a factor that influences a technique or type of research that will be used. The author sets out two types of data obtained in this study. Both types of data are primary data and secondary data.

Primary data in this study were obtained directly from the questionnaire deployment process to the respondents who were considered to have the capability and relations to the implementation of the ERP system in the client company PT. Artsys Integrasi Solusindo. Secondary data in this study is in the form of data that has been published by the company such as company profile data obtained from company documents and other data that are directly related to and related to the object under study as a source of calculation to become data ready for use.

Population and Samples

In this study, the study population was all employees working in the client company of PT Artsys Integrasi Solusindo that were directly related to the ERP system. The sampling method in this study uses non-probability sampling with a quota sampling technique based on criteria.

In this study, researchers took samples of people who are considered by the author to have sufficient knowledge and experience to provide an assessment of ERP implementation in the client company PT. Artsys Integrasi Solusindo. Criteria for respondents in this study include:

1) Decision-makers in terms of assessing ERP implementation, namely the Owner, Directors, General Managers/Dept. Heads in various parts that directly interact with the ERP system.
2) Employees at the level manager/supervisor and staff or senior staff as users in the part where the ERP system is implemented.

A total of 80 sample quotas were determined by classification based on the criteria according to each company.

Data Processing and Analysis Techniques

Data processing from respondents was carried out systematically using the *IBM SPSS Statistics version 23*. Software data analysis methods were carried out with descriptive and quantitative analysis. Descriptive analysis aims to describe the role and contribution of the six critical success factors in influencing the success of ERP implementation. This analysis uses descriptive data from the results of the study and the calculation of the range of criteria and the scale range of item values to the respondents' answers obtained from the questionnaire.

After that, a quantitative analysis is carried out where an analysis uses measurements involving several of specific units or expressed by numbers. The method of analysis is carried out by using the *IBM SPSS Statistics version 23* program by validity test, reliability test, multiple linear regression analysis, and hypothesis testing.

RESULTS and DISCUSSION

Validity and Reliability Test

Before further using the collected data, it is necessary to test the validity and reliability of the data used in this study. The validity test aims to determine whether all statements (instruments) of the research proposed to measure research variables are valid. While the reliability test aims to test how reliable the data used in this study.

Through data processing using the *IBM SPSS Statistics version 23* program, the results show that all questionnaire questions (instruments) are valid, they have significance below 0.05. Whereas reliability testing was carried out using an alpha reliability coefficient (*Cronbach's alpha*) method. *The Cronbach's Alpha* values for the seven variables are 0.706, 0.771, 0.723, 0.721, 0.919, 0.726, and 0.843. The seven variables have an alpha value > 0.70 (Standard Value). So that it can be said that all instruments used are reliable.

Multiple Regression Analysis

Based on the results of data processing carried out using the *IBM SPSS Statistics version 23* program, multiple linear regression equation coefficients can be conveyed as shown in table 8, below:

Table 8. Coefficient of Multiple Linear Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.073	2.504		-1.227	.224
	CMTot	.429	.167	.224	2.561	.013
	PMTot	.931	.158	.696	5.906	.000
	TMSTot	.285	.135	.183	2.104	.039
	SCOTot	-.489	.192	-.322	-2.547	.013
	BUDTot	.183	.091	.185	2.020	.047
	EDUTot	-.076	.122	-.043	-.622	.536

a. Dependent Variable: SUCTot

Source: Results of Primary Data Processing (2019)

Based on table 8, multiple linear regression equations can be formed as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 \quad (1)$$

$$Y = -3.073 + 0.429 X_1 + 0.931 X_2 + 0.285 X_3 - 0.489 X_4 + 0.183 X_5 - 0.076 X_6$$

Remark:

Y = Success of ERP Implementation
α = Constant
$\beta_1 \ldots \beta_6$ = Regression Coefficient
X_1 = Change Management variable
X_2 = Project Management variable
X_3 = Top Management Sponsorship variable
X_4 = Realistic Scope Setting variable

X_5 = Adequate Budget variable
X_6 = Education in ERP Project variable

Hypothesis Testing
Partially Regression Coefficient Test (t Test)

The t test is a way to test the significance of the relationship between two variables between each independent variable (Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in ERP Project) with dependent variables (Successful ERP Implementation) in each case by setting variables that are not measured.

The t test for Change Management factors and Success of ERP Implementation can be explained as follows. From the results of processing data in table 8 above, it is known that t_{count} = 2.561. By using α = 5% (n-k) it is known that the value of t_{table} is 5% (80 - 7) = 1.99300. It was concluded that t_{count} (2.561)> t_{table} (1.99300) and significance value below 0.05 which is equal to 0.013 means that H_0 is rejected. So that it can be concluded that Change Management has a significant influence on the Success of ERP Implementation.

The t test for Project Management factors and the Success of ERP implementation can be explained as follows. From the results of processing the data in table 8 above, it is known that t_{count} = 5.906. By using α = 5% (n-k) it is known that the value of t_{table} is 5% (80 - 7) = 1.99300. It was concluded that t_{count} (5.906)> t_{table} (1.99300) and significance value below 0.05 which is equal to 0,000 means that H_0 is rejected. So that it can be concluded that Project Management has a significant influence on the Success of ERP Implementation.

The t test for the Top Management Sponsorship factor and the Success of ERP Implementation can be explained as follows. From the results of processing the data in table 8 above, it is known that t_{count} = 2.104. By using α = 5% (n-k) it is known that the value of t_{table} is 5% (80 - 7) = 1.99300. It was concluded that t_{count} (2.104)> t_{table} (1.99300) and significance value below 0.05 which is equal to 0.039 means that H_0 is rejected. So that it can be concluded that the Top Management Sponsorship has a significant influence on the Success of ERP Implementation.

The t test for the Realistic Scope Setting factors and the Success of ERP Implementation can be explained as follows. From the results of processing data in table 8 above, it is known that t_{count} = -2,547. By using α = 5% (n-k) it is known that the value of t_{table} is 5% (80 - 7) = 1.99300. It was concluded that -t_{count} (-2,547) <-t_{table} (-1.99300) and significance value below 0.05 which is equal to 0.013 means that H_0 is rejected. So that it can be concluded that the realistic scope setting has a significant influence on the success of ERP implementation.

The t test for Adequate Budget factors and the Success of ERP implementation can be explained as follows. From the results of processing the data in table 8 above, it is known that t_{count} = 2,020. By using α = 5% (n-k) it is known that the value of t_{table} is 5% (80 - 7) = 1.99300. It was concluded that t_{count} (2,020)> t_{table} (1.99300) and significance value below 0.05 which is equal to 0.047 means that H_0 is rejected. So that it can be concluded that an adequate budget has a significant influence on the success of ERP implementation.

The t test for Education in ERP project factors and the Success of ERP implementation can be explained as follows. From the results of processing data in table 8 above, it is known that t_{count} = -0.622. By using α = 5% (n-k) it is known that the value of t_{table} is 5% (80 - 7) = 1.99300. It was concluded that -t_{count} (-0.622)> -t_{table} (-1.99300) and significance value above 0.05 which is equal to 0.536 means that H_0 failed to reject. So that it can be concluded that the Education in ERP Project does not have a significant effect on the success of ERP implementation.

Simultaneously Regression Coefficient Test (F Test)

Table 9 below shows the magnitude of probability numbers in the Anova calculation that will be used to test the feasibility of the regression model provided that a good probability number to be used as a regression model must be smaller than 0.05. The results of data processing using the *IBM SPSS Statistics version 23* program, as follows:

Table 9. Coefficient of Multiple Linear Regression (ANOVA)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	463.756	6	77.293	25.367	.000[b]
	Residual	222.431	73	3.047		
	Total	686.187	79			

a. Dependent Variable: SUCTot

b. Predictors: (Constant), EDUTot, BUDTot, CMTot, TMSTot, PMTot, SCOTot

Source: Results of Primary Data Processing (2019)

The F Test results obtained several 25,367 with a significance level of 0.000. Due to the 0,000 significance number is less than 0.05, the Multiple Linear Regression model can be used to predict the Success of ERP Implementation.

From the results of data processing using the *IBM SPSS Statistics version 23* program in table 9 above it is known that the value of F_{count} = 25,367. When compared with the value of F_{table} by using a probability of 0.05, it is known that the value of F_{table} = 0.05 (k-l). (n-k) = 0.05 (7-1). (80-7) = 2.23. Then it can be seen that F_{count} (25,367)> F_{table} (2.23) and significance value below 0.05 which is equal to 0,000 means H_0 is rejected. It can be interpreted that there is a linear relationship between independent variables simultaneous with the dependent variable.

It can be concluded that Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budgeting, and Education in ERP Project simultaneously influence the Success of ERP Implementation.

Determination Coefficient (R Square)

In table 10 below shows the value of the coefficient of determination which functions to determine the percentage of the dependent variable, Success of ERP Implementation, which can be predicted using independent variables, Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in the ERP Project

T**able 10. Determination Coefficient**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.822[a]	.676	.649	1.74557

a. Predictors: (Constant), EDUTot, BUDTot, CMTot, TMSTot, PMTot, SCOTot

Source: Results of Primary Data Processing (2019)

It is known above that the number R is the correlation value or the value of the relationship between Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in the ERP project with Success of ERP Implementation, which is 0.822. So that the relationship of Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in the ERP project with Success of ERP Implementation is 82.2%.

While the number R Square (correlation number or r squared) can also be referred to as the coefficient of determination. The amount of the determination coefficient is 0.676 or equal to 67.6%. This figure can be interpreted that all independent variables, Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, Adequate Budget, and Education in the ERP project, can explain the relationship with the dependent variable, Success of ERP Implementation of 67.6%. While the remaining 32.4% is explained by other variables not discussed in this study.

Discussion

The Effect of Change Management on the Success of ERP Implementation

Based on the results of the t test and the significance values in table 8 interpret that the first hypothesis is proven. There is a significant influence between change management and the success of ERP implementation. These results support previous studies and by the understanding of the author in the field. The respondents argue that change management is very necessary for supporting the success of ERP implementation.

Change management that occurs also must cover the entire ERP project lifecycle. The scope that must be managed in change management is human, culture, and organization. Human factors are related to motivation and acceptance of the importance of change. Organizational factors involve changing roles and responsibilities during the project. Likewise, if there is a need to change organizational structures to sustain ERP implementation or even change massively due to restructuring adjusting to new business processes.

The Effect of Project Management on the Success of ERP Implementation

Based on the results of the t test and the significance values in table 8 interpret that the second hypothesis is proven. There is a significant influence between project management and the success of ERP implementation. This is by the results of previous studies stating that there is an influence between project management and the success of ERP implementation. Respondents argue that project management and its attributes are very dominant factors in determining the success of ERP implementation.

Most ERP users are the initial users of ERP applications. So it depends on the direction of the project management officer in implementing ERP projects. The presence of a strong and experienced Project Manager in an ERP project is a cornerstone. Likewise, the ability of the project manager to control stakeholders and oversee the scope and deadlines of go-live ERP is a factor that is seen by respondents as the main determinant of successful ERP projects.

The Effect of Top Management Sponsorship on the Success of ERP Implementation

Based on the results of the t test and the significance value in table 8 interpret that the third hypothesis is proven. There is a significant influence between Top Management Sponsorships and the success of ERP implementation. This supports several previous studies and by the actual conditions in the field which states that the company's top management support plays a very important role in the success of ERP implementation.

Respondents considered that support from Top Management was very dominant and had a big influence on the success of ERP implementation. Top management sponsorships include that the top management of the company is the initiator of an ERP project, deciding which software and service providers to use, and actively guarding the ERP project. Some successful ERP projects are escorted in a weekly or monthly direct review meeting by the owner of the company or its operational directors.

The Effect of Realistic Scope Setting on the Success of ERP Implementation

Based on the results of the t test and the significance values in table 8 interpret that the fourth hypothesis is proven. There is a significant influence between the Realistic scope setting with the success of ERP implementation. This is by the author's predictions and based on several previous studies which stated that there is an influence between the realistic scope setting and the success of ERP implementation.

But in this study realistic scope setting correlated negatively with the success of ERP implementation. The respondents argue that if the determination of the scope of the ERP project is much realistic and not comprehensive, it will cause the success of the ERP implementation in the company to be disrupted. Flexibility in ERP scope determination is needed, including when determining ERP modules that will be implemented, determining go-live schedules, and the necessity of customization in best practices based on ERP standards. This is aimed to achieve the final target of ERP implementation itself.

The Effect of Adequate Budget on the Success of ERP Implementation

Based on the results of the t test and the significance values in table 8 interpret that the fifth hypothesis is proven. There is a significant influence between the adequate budget and the success of ERP implementation. Respondents thought that adequate budget is a dominant factors in determining the success or failure of ERP implementation.

The budget is the main factor to produce a successful ERP project. Sometimes it is very difficult to get adequate budget approval for ERP implementation. But on the other hand, only with a reasonable budget, a company can buy good ERP software. Adequate budgeting is also needed to pay for the services of a qualified and experienced ERP implementation consultant. Similarly, to buy platforms/hardware to run ERP applications quickly and smoothly without much disruption caused by poorly operating systems and slow processing speeds.

The Effect of Education in ERP Project on the Success of ERP Implementation

Based on the results of the t test and the significance values in table 8 interpret that the sixth hypothesis is not proven. There is no significant influence between Eduction in the ERP project and the success of ERP implementation. Although in other similar studies conclusions are stating that there is an influence between education and training with the success of ERP implementation, in this research, respondents consider this factor to have no significant effect.

This means that the more education and training applied in an ERP project, the ERP implementation will fail. Based on interviews with several respondents, the ERP training program that takes a long time (4-6 weeks) and involves the executors of daily business processes is considered excessive and disturbing. So, they argue that the more training it is, the more it will not support the success of ERP implementation.

The Effect of Variable Independent Simultaneously to the Success of ERP Implementation

Based on the results of the F test and the significance values in table 9, the seventh hypothesis is proven. There is a simultaneous influence of Change Management, Project Management, Top Management Sponsorships, Realistic Scope Setting, Adequate Budgeting and Education in ERP Project on the significant success of ERP Implementation.

To see the value of the simultaneous influence can be seen in the coefficient of determination (R Square) in table 10 which states the simultaneous contribution of the independent variable to the dependent variable of 0.676. This figure can be interpreted that all independent variables can explain the relationship to the dependent variable of 67.6%. While the remaining 32.4% is explained by other independent variables that not discussed in this study.

CONCLUSION

Increasingly complex company operations involve complex business processes in various departments/divisions increasingly demanding the application of reliable computer applications (Rajasekar, 2014). The demands for implementing integrated business process applications between departments/divisions are increasing. Many companies want to improve their performance by running an ERP system (Sandy, 2016). However, based on previous research data, the failure rate of information technology projects is reported to range between 30% -70% (Krigsman, 2010).

PT. Artsys Integrasi Solusindo is one of the consultant companies and implementers of ERP systems. ERP system implementation in its client companies does not always run smoothly. Based on company data, the failure rate of ERP implementation reached 23%. In this study, the author intends to find out what factors influence the success of ERP implementation, so that failures in ERP implementation can be minimized.

In this study, the authors identified 6 critical success factors for ERP implementation. The results show that the respondents in this study consider the following five factors to be very important for the success of ERP implementation, namely: (1) Change Management factors, (2) Project management factors, (3) Top Management Sponsorship factors, (4) Realistic Scope Setting factors, and (5) Adequate Budget factors. While the Education in ERP Project factors has no significant effect on the

success of ERP implementation. But the six factors above simultaneously have a significant influence on the success of ERP implementation.

Serious implications to be considered by ERP practitioners and companies that will and are implementing ERP are the conclusions of this study stating that factors Change Management, Project Management, Top Management Sponsorship, Realistic Scope Setting, and Adequate Budget are factors the main key to the success of ERP implementation. So that in implementing ERP implementation, these factors must be carefully considered and prepared, so that ERP implementation has a great potential for success.

As one example is Project Management. Consultant institutions or ERP implementers should be able to develop well-planned and structured project management. This also includes a qualified, reliable and experienced Project Manager. Full support and direct involvement of the Top Management of the company also has an important role and cannot be underestimated in supporting the success of ERP implementation. An adequate budget also needs to be prepared to run the ERP project properly. Therefore, it should be considered to make every effort to get the proper budget before implementing the ERP project. When there is an inadequate budget situation, the ERP project is better postponed until an adequate budget can be obtained.

Besides, two things need to be highlighted in the ERP implementation. Based on previous studies, the establishment of a Realistic Scope Setting and Education in ERP projects has a positive influence on the success of ERP implementation. But in this study, the respondents gave different opinions. The more realistic scope setting (in the selection of ERP modules, etc.) and the more and more intensive education in the ERP project, according to respondents, will make the ERP implementation fail. This, of course, must be addressed wisely by ERP consultants and implementers and anticipatory steps need to be taken, adjusting the conditions and conditions of the client company.

This research is very limited. The results of this study are still wide open the various possibilities of the results of similar studies when carried out on different respondents. Respondents in this study were respondents who used Odoo more as their ERP software. On the other hand, the profile of the respondents is mostly supervisors and managers. Further research with a wider range of respondents is needed to get input from wider parties.

Besides, it also needs to be considered to examine other factors that influence the success of ERP implementation besides those discussed in this study, for example, User Involvement, Contributions of ERP Consultants, Business Process Re-engineering and several other important factors.

REFERENCES

Bingi, P., Sharma, M. K., & Godla, L. K. (1999). Critical Issues Affecting an ERP Implementation, Information Systems Management, 16 (3), 7-14.

Brady, Joseph A. (2001). Concepts in Enterprise Resource Planning. 3rd Edition.USA: Thomson Learning.

Buckhout, S., Frey, E. and Nemec, J.Jr (1999). Making ERP succeed: turning fear into promise. IEEE Engineering Management Review, pp 116-23.

Davenport, T.H, Prusak, L. (2000). Working Knowledge: How Organization Manage What They Know. Boston: Harvard Business School Press.

Falkowski, G., Pedigo, P., Smith, B. and Swanson, D. (1998). A recipe for ERP success. Beyond Computing, pp. 44-5.

Fitrah, M. (2010). Factors that Influence the Successful Implementation of Enterprise Resource Planning. Thesis. University of Indonesia, Jakarta. (Translate)

Haming, M., and Mahmud Nurnajamuddin. (2011). Modern Production Management of Production and Service Operations. Jakarta: Bumi Aksara. (Translate)

Hartono, Jogiyanto. (2007). Computer Based Accounting Information System. 2nd edition. BPFE, Yogyakarta. (Translate)

Jaluanto and Masita Fitri Devityani. (2015). Analysis of Critical Success Factors of Bank Accounting Information Systems in Semarang City. Untag Scientific Journal: Semarang. (Translate)

Kerzner, Harold. (2004). Advanced Project Management: Best Practices on Implementation. John Wiley & Sons, Canada.

Krigsman, M. (2010). ERP Failure: New Research and Statistics, February 3, 2010, accessed on 30/09/2018 at http://www.zdnet.com/blog/projectfailures/erp-failure-new-research-and-statistics/8253

Legare, Thomas. L. (2002). The Role of Organizational Factors in Realizing ERP Benefits. IS Management. 19. 21-42.

Martinsons, M.G. and Westwood, R.I. (1997). Management Information System in the Chinese Business Culture: an Explanatory Theory. Information & Management, 32, 215-228

Nah, F.F., Islam, Z., & Tan, M. (2007). Imperical Assessment of Factors Influencing Success of Enterprise Resource Planning Implementations. In journal of database management. IGI Global.

Nah, F and Lau, J. (2001). Critical Factors for Successful Implementation of Enterprise Systems, Business Process Management Journal, 7 (3), pp 285-296.

O'Brien JA, Marakas G. (2005). Management Information System. Ninth edition. Boston: Mc Graw Hill, Inc.

Rajasekar, J. (2014). Factors Affecting Effective Strategy Implementation in a Service Industry: A Study of Electricity Distribution Companies in the Sultanate of Oman. International Journal of Business and Social Science, 5, 169-183.

Rosario, J.G. (2000). On the Leading Edge: Critical Success Factor in ERP Implementation Projects. Business world Philippines.

Ross, J. W. (1999). Surprising Facts About Implementing ERP. IEEE IT Professional, 4, 65-68.

Sandy, Agata Aries. (2016). Analysis of Factors that Influence the Success of ERP Implementation in Banking Companies in Semarang. Essay. Diponegoro University, Semarang. (Translate)

See Pui Ng, Celeste, Chan, T., & Guy G. Gable. (2001). A Client-benefits Oriented Taxonomy of ERP Maintenance. proceedings of the IEEE international conference on software maintenance, 7-9 Nov. 2001, Florence, Italy. IEEE.

Shanks, G.; Parr, A.; Hu, B.; Corbitt, B.; Thanasankit, T.; and Seddon, P. (2000). Differences in Critical Success Factors in ERP Systems Implementation in Australia and China: A Cultural Analysis. ECIS 2000 Proceedings. 53.

Sum, C. C., J. S. K. Ang, and L. N. Yeo. (1997). Contextual Elements of Critical Success Factors in MRP Implementation. Production and Inventory Management Journal. 3: 77-83.

Summer, M. (1999). Critical Success Factor in enterprise wide information management system projects, Proceeding of the Americas Conference on Information Systems (AMCIS) pp 232-4.

Tarigan, Zeplin Jiwa Husada. (2013). Analyze the Implementation of Enterprise Resource Planning at the Company. Petra Christian University Surabaya. (Translate)

Tjakrawala and Lukita. (2012). Critical Success Factors Model in Implementing Enterprise Resource Planning Systems to Provide Net Benefit for Companies by Using Partial Least Square. Kopertis, Jakarta. (Translate)

Toruan, Dewi Margaret. (2013). Success and Failure to Implement Enterprise Resources Planning (ERP) and Examples of Case Studies of PT Semen Gresik & Fox Meyer. Bogor Agricultural Institute. (Translate)

Tripomo, Tedjo. (2005). Strategy Management. Engineering Science, Bandung. (Translate)

Wee, S. (2000). Juggling toward ERP success: Keep key success factors high. ERP News, February.

Wijaya, Santo F and Darudiato Suparto. (2009). ERP and Business Solutions, Yogyakarta: Graha Ilmu. (Translate)

Winahyu, T. R. (2005). Analysis of Determinants of Success in the Implementation of Enterprise Resource Planning (ERP) System Packages To achieve the Competitive Advantage of the Company, Tesis, Diponegoro University, Semarang. (Translate)

Nusraningrum, Dewi. (2018). Top Management Vision Through Role Models, Determination and Dicsiplines. European Research Studies Journal Volume XXI, Issue 4.