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Research paper

Key Success Factor for Successful ERP Implementation in State Owned Enterprises

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Abstract

ERP implementation is a way to improve competitive advantage, and ERP is one of the factors that affect the company's performance. However, many studies reveal that many companies trying to implement ERP failed although in the end many were successful. To achieve its success, several key factors to be considered include top management support, effective project management, business process reengineering, hardware and software selection, education and training, and vendor support. This study aims to explore the key of successful implementation of ERP in state-owned enterprises in Bandung, Indonesia. Related to state owned enterprises that have failed and succeeded in the implementation of ERP, the effective management project analysis has a significant influence on the success of system implementation while top management support, business process reengineering, hardware and software selection, education and training and vendor support have no effect on the success of ERP implementation. However all variables studied simultaneously have effects on the success of ERP implementation.

Keywords: *Key Success Factor, ERP, Business Process Reengineering, Hardware and Software*

1. Introduction

ERP system is a system that integrates and automates company activities such as manufacturing, finance and supply chain management [5]. [21] stated that the use of ERP applications provides several benefits to the company. Besides, the development of information systems within the company is instrumental in improving the quality of service to consumers, shortening cycle time and reducing costs [8]. ERP is an integrated system of information in every business function of a company [3].

Many ERP systems have failed during its implementation. The average failure of ERP software implementation in the world based on survey results is 50% - 70%. Standish Group stated that only 10% of companies succeeded in implementing ERP, 35% of projects canceled and 55% delayed. The condition is also experienced by companies in Indonesia. However, the failure is rarely revealed because the average companies embarrassed to reveal the details of the failure that will degrade the image of the company and disappoint its consumers and shareholders [6], and 91% of ERP implementation projects finished exceeding the cost planned [22]. The inappropriateness of ERP implementation resulted in many of the companies being bankrupt and many decided not to use ERP [21]. The implementation of ERP as in implementation exceeds 178% of the budget, requires 2.5 of the time specified, and only 30% provides benefits [26]. Other studies have shown that 90% show delays in implementation and there is always an additional set of budgets [24].

In some cases of ERP implementation failures, Western countries whose IT with good infrastructure is high and ERP experience is tailored to business systems shows better success. It also happens in developing countries that have different key success factors in implementing ERP [3]. Critical success factors are crucial to achieving organizational goals, and overall are critical in ERP implementation. Critical success factors identify priorities and factors affecting ERP implementation [2].

Some state owned enterprises in Indonesia did not escape the problem of ERP implementation, which began from a sizable failure experience to a long period of time to implement ERP. Efforts to improve the performance of both private and state enterprises require knowledge about factors that affect the implementation. Factors suspected to affect companies performance are ERP implementation, ERP implementation affecting non-financial performance of company, and long-term ROA and stock return [25]. As an example, we learnt the failure of Indonesian Railway Company, in implementing ERP for the first time in 2010 due to the misinformation of the information technology team in understanding the condition of human resources and its infrastructure that resulted in the distrust of directors and employees. Therefore, it takes sufficient time to foster trust of the directors and employees. In 2009 Pertamina succeeded in implementing ERP in all units of the company. The big bang method applied to the entire company line requires full board of director support. With the maximum support from the high level of leadership in the company the processes of ERP development and implementation can be done.

Given the high rate of non-optimization in the implementation of ERP, many researchers have examined the factors that influence the success of ERP implementation with

Critical success factors [1]. This research uses Critical success factor because this model can capture the benefits in financial and non financial. [21] suggested that business process reengineering, user training, technology infrastructure, change management, top management support, effective communication, balanced teams, user participation, consultant participation and clear goals and objectives are factors influencing the success of ERP system implementation. Other research conducted by [23] states that the most influential factors are training and education, top management support, business process reengineering and supplier support. [9] gained influential factors: business process reengineering and change of management, while external support and top management support become factors that have no effect.

Based on the fact that have been mentioned above and due to inconsistent results, the authors are interested to conduct research on state owned enterprises in Bandung, Indonesia.

2. Literature Review

1. Key Success Factor

The critical success factors in ERP implementation are that a combination of several factors, which is not a single element. The combination of the right factors will always vary from time to time and must be in accordance with the company's specific conditions. According to Rockart the success factor is if the work is satisfactory then it will guarantee the success of competitive performance for the organization [13]. [16] concluded that the critical success factors are important factors in software design projects that affect management success in software development efforts without ignoring design and development methodology, implementation languages or major applications. The concepts of success factors in the information system literature are well established in many contexts, for example, the need for system analysis [15], information system planning and project management [19]. Three factors consistently appear as critical success factors for information systems projects: top management support, client consultation (user involvement), and clear project objectives [14].

Referring to some previous research, this research used 6 factors from the determinants of success because these 6 factors are the most widely emerging, namely top Management support, Effective Management Project, Business Process Reengineering, Selection of Software and Hardware, Education and Training, Vendor Support.

H1: Top management support, effective project management, business process reengineering, hardware and software selection, education and training, vendor support, impact on the successful of ERP implementation

2. Top Management Support

Commitment from top management should be emphasized on all parts of an organization [4]. Support from top management is a critical factor in project survival. The implementation may fail if some of the critical resources (such as employees, funds and tools) [18] are not available. Top management should be able to create an awareness that the successful implementation of ERP will improve the effectiveness of the company.

H2: Top management support affect the successful of ERP implementation

3. Effective Project Management

ERP implementation system is a complex collection of activities that involve all business functions within the company and it takes one to two years and even more. Therefore, a strategy is needed to control it, to avoid large budget disbursements and to ensure that the implementation time is consistent with predefined time schedule [10]. With all the activities all business functions will run effectively and encourage the successful implementation of ERP.

H3: Effective project management affects the successful of ERP implementation

4. Business process reengineering

Business process reengineering was described by [7] as rethinking and redesigning business processes to improve company performance in terms of cost, quality, speed and service. Business Process Reengineering incorporates strategies to promote business innovation with strategies to make major improvements to business processes, so that companies can become much more powerful and become more successful competitors in the marketplace. Companies need to set new goals and objectives. The vision of the organization and the role of the structure of the new system should be communicated to all employees. The structure, responsibilities and roles of the new organization must be mature and approved. Policies should be set by top management to establish new systems in the company [17].

H4: Business process reengineering affects the successful of ERP implementation

5. Selection of Hardware and Software

The selection of hardware and software should be tailored to the needs of the company [18]. If the basic module is sufficient, there is no need to purchase additional modules. In addition the selected ERP system should be easy in the customization process, tailor to the company's condition and should also be easily transferred to a higher version. There must be continuous improvement of system advantage where this improvement should not interfere with the configuration of existing computer systems.

H5: Selection of hardware and software affects the successful of ERP implementation

6. Education and training

Education and training refers to the preparation process for employees and management through explanations of the logic and overall concepts of the ERP system [11][18]. Thus, people will be able to better understand how their work relate to other functional areas within the company. A user is a person who produces the results and is responsible for the system to be executed as expected.

H6: Education and training affect the successful of ERP implementation

7. Vendor support

Cooperation with vendors/customers is critical to the success of ERP projects [20]. Vendor support is necessary because if there is a problem in the implementation of ERP, it requires a fast response from the vendor to solve the problem. Research shows that better conformity between vendor software and user/user organization is positively related to the success of software implementation packages [12].

H7: Vendor Support affects the successful of ERP implementation

3. RESEARCH METHOD

This research is included in the type of verification research that aims to test the hypothesis through validation of a theory or testing the application of a theory. The independent variables in this research are critical success factor in ERP implementation, which are top management support, effective project management, Business Process reengineering, Selection of hardware and software, Education and training, and Vendor Support. The

dependent variable in this research is the success of ERP implementation.

Population in this research is all user of ERP in state owned enterprises in Bandung, Indonesia. The method used is sample of census. The sample used is saturated sample from entire population amount exist. Data were collected through questionnaires and each respondent's opinion on the questions or their proposed statements were rated with likert scale. Data quality testing was done through validity test and reliability test. Data analysis techniques and hypothesis testing were conducted using normality test and multiple linear regression analysis. Questionnaires that have been collected and processed are as many as 61.

4. RESULT

To find out the mutual relationship between Top Management Support (X1), Effective Project Management (X2), Business Process Reengineering (X3), Hardware and Software (X4), Education And Training (X5), and Vendor Support (X6) Against the success of ERP (Y), multiple correlation analysis (R) is used.

Table 1. Multiple Correlation Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.627[a]	.393	.325	.63520

a. Predictors: (Constant), X6, X2, X4, X1, X3, X5

b. Dependent Variable: Y

Project Management, Business Process Reengineering, Hardware and Software, Education And Training, and Vendor Hardware and Software, has an effect of 39.3% against the success of ERP. Meanwhile the rest of 60.7% is the contribution of other variables in addition to the variables being studied.

Table 2. Hypothesis Testing Overall (Test F)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.101	6	2.350	5.825	.000[a]
	Residual	21.788	54	.403		
	Total	35.889	60			

a. Predictors: (Constant), X6, X2, X4, X1, X3, X5

b. Dependent Variable: Y

From the above table, we get the sig value of 0.000. As

the result, it can be concluded that simultaneously there is a significant influence of top management support (X1), Effective Project Management (X2), Business Process Reengineering (X3), Hardware and Software (X4) Education and Training (X5), Vendor Support (X6) and against ERP Success (Y).

To see the effect of Top Management Support (X1), Effective Project Management (X2), Business Process Reengineering (X3), Hardware and Software (X4), Education and Training (X5), Vendor Support (X6) to ERP Success (Y) multiple linear regression analysis was ussed. Results of SPSS 20 software processing for multiple regression analysis are presented in the following table:

Table 3. Multiple Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Correlations Zero-order
1	(Constant)	1.534	.424		3.613	.001	
	X1	-.168	.154	-.178	-1.090	.280	.282
	X2	.670	.164	.671	4.086	.000	.573
	X3	-.266	.208	-.274	-1.277	.207	.249
	X4	.036	.203	.038	.179	.858	.204
	X5	-.175	.218	-.182	-.803	.426	.369
	X6	.438	.229	.434	1.913	.061	.429

a. Dependent Variable: Y

Y = ERP Success
X_1 = Top Management Support
X_2 = Effective Project Management
X_3 = Business Process Reengineering
X_4 = Hardware and SOftware
X_5 = Education and Training
X_6 = Vendor Support
a = Constants
b1, b2, b3, b4, b5, b6, = Regression Coefficients

Based on the calculation results in the table above, the form of multiple linear regression equation can be described as follows:

Y = 0.1534 - 0.168 X1 + 0.670 X2 - 0.266 X3 + 0.036 X4 - 0.175 X5 + 0.438X6

Referring to the results of partial regression testing, it is known that only effective project management that affect the implementation of ERP. It means the better implementation of project management the more effective implementation of ERP will be.

Descriptively, respondents were processed and based on the results, the total score for the support of top management after inserted into the continuum is 88.4% of line, whice means Top Management Support is in a very good category. Respondents thought that full commitment to the implementation of ERP from top management, the need to provide the necessary resources during the implementation period and the need for leadership attitudes have been felt very well.

Respondents' responses on effective project management illustrate that the project manager who can understand the business needs of the company, can place the right people in the implementation period and effective communication required in the immigration period is considered very well. It is indicated with a value of 86.9%

In Business Process Reengineering, employees are aware and understand that their actions using ERP can affect other departments operations, reengenering business activities need to be felt on the needs of corporate customers, and top management needs to understand how business analysis to customer needs. It shows the value of 84.6% that belongs to a very good category.

Hardware And Software showing the value of 85.7% is in the category of very good, where there should to be a match between the selection of software and hardware to the needs of the company, the need for ease in the process of upgrading hardware and software to the system implemented, and it requires the ease of customization process to the system used.

Education and Training based on the results of the process show the value of 88.6%, meaning that Education and Training are in very good category. This is underline by the selection of qualified teachers during the education and training period, the availability of a simple and easy- to- understand manuals for trainees, as well as the existence of transferring of knowledge among participants about the system being implemented.

Vendor Support shows 87.8% value, so Vendor Support is in a very good category. That means that there are quick response from vendor when problems occur in implementing ERP, active participation from vendor in ERP implementation process, and vendor willingness to give quality consultation knowledge of

business processes and information systems.
The success rate of ERP implementation shows a value of 86.1% which means that ERP success is a in very good category. It explains that ERP implementation can increase productivity, increase sales, reduce operational costs, and improve profitability, efficiency, and go-live date according to its schedule set.

5. Conclusion

According the result of the research, it can be concluded that Management Support, Effective Project Management, Business Process Reengineering, Hardware and Software, Education And Training, and Vendor Support affect the success of ERP. Meanwhile, partially only effective project management affects the successful implementation. The implementation of other variables on state owned enterprises that are meticulously based on questionnaires show excellent results. It related to good employee recruitment hence initiative, adaptability, employee behavior support ERP implementation. On the other hand, the use and selection of software has become a concern, which is a form of management support and selective vendor selection.

Limitation

Samples for this study is taken from a state owned enterprises in Bandung, Indonesia, which has not yet brought in an ERP system. Further research can be developed with a broader sample appearance. The variables that can not be changed become more apparent for different companies to get more comprehensive information.

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