




An Enhanced Information System Success Model for Enterprise Resource Planning Implementation on State-Owned Enterprise

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Abstract. The concept of Enterprise Resource Planning (ERP) was integrating each line in the company's management transparently and within high accountability. With the concept of ERP, one department can access other department's data easily through an integrated network. ERP has been widely applied in several companies in Indonesia. ERP adoption in Indonesia is based on an efficiency system that can support company performance and capacity. However, the implementation of ERP could be facing more obstacles. Some of ERP implementation running smoothly, but some of them confront failed implementation. Therefore, a dedicated model framework is needed as a reference or guideline in measuring and evaluating the success of ERP implementation. This model framework will be a guidance intended to companies that willing to adopt ERP. This research proposes an ERP success model. Authors redefining and integrating previous IS Success model by previous researchers. The model examines whether any factors build in the model are have significant impact to ERP implementation success. The result of the study shows, from 14 hypothesis 12 of them are accepted. The factors proven to be influenced to the user satisfaction, intention to use and ERP benefit. This model framework believed can be a useful guidance to the company or organization who willing to implement ERP system, to discover certain determinants that should be considered first before implementing the system. With the result of the study, authors trust that the model can help increasing number of successful ERP implementation.

Keywords: Enterprise Resource Planning · ERP Success Model · ERP Benefit

1 Introduction

State-Owned Enterprise, the institution which is directly responsible for monitoring and moving the wheels of State Own Enterprise lies with the Ministry of State-Owned Enterprise. This strategic management and policy setting of the ministry is quite important to observe. In the SOE strategic plan (Ministry of SOEs, 2012b), several SOE objectives are

mentioned (SOE Ministry, 2012): (1) Supporting the national economy development and contributing to the state revenue in particular. (2) Chasing profits. (3) Carrying out public benefits in the form of providing goods and / or services of high quality and sufficient for the fulfillment of the lives of many people. (4) Pioneering business activities that cannot yet be carried out by the private sector and cooperatives. (5) Also actively providing guidance and assistance to entrepreneurs of the economically weak group, cooperatives, and the community. From this basis, the steps of the Ministry of SOEs that embed the vision of the institution “Becoming a Professional SOE Builder to increase the value of SOEs” should be appreciated. Furthermore, the Ministry of State-Owned Enterprise have also formulated the mission of the organization as follows (Ministry of State-Owned Enterprise, 2012): (1) Realizing a modern organization in accordance with good governance. (2) Enhancing State-Owned Enterprise competitiveness at national, regional and international levels. (3) The State-Owned Enterprise grow to support and increase the national economy.

In Law No. 19 of 2003 concerning SOEs, SOEs have discretion in management (Republic of Indonesia, 2003). Thus State-Owned Enterprise has the discretion to have information technology investment. The intended information technology investment is that SOEs implement enterprise resource planning systems with the aim of being able to increase productivity, reduce operational costs, improve accuracy of data that is mutually integrated so as to create added value and support operational and business activities effectively and efficiently. This study discusses the relationship between ERP systems success and the competitiveness of the company. The study aimed to determine the extent the research model, to seek for the factors that determine the successful implementation of enterprise resource planning.

Based on the above background, this research formulated three main concerns in ERP implementation. They are, the way to enhanced information system success model to be an ERP success model, the result of measurement in each variable in the new model and the critical factors that should be the most considered in ERP implementation at State-Owned Enterprise. Prior research has conducted an analysis through ERP development, but few of them developed an enhanced model which adapted to the organizational condition and culture. The proposed model can be used by certain type of company to be the guidance on ERP implementation. This proposed model can also be used in various type of ERP framework.

The study examined the relationship between enterprise resource planning systems with employee tasks and whether the application of enterprise resource planning systems in several state-owned manufacturing companies can have an impact on company benefit. The purpose of this study was to determine a new enhanced model that including the relationship between ERP systems with company benefit and the implementation of ERP systems in state-owned manufacturing companies that impacted company performance.

An integrated survey was conducted to gather the primary data from several State-Owned Enterprise in developing country. Authors used mixed survey question (qualitative and quantitative research method) to developed the study. From the survey that has been conducted, the study proved that 85% of the hypotheses has been accepted. The study indicated some built variables can be importance factors to be concerned in implementing ERP system. Several added variables through enhanced model can be a guidance to

company especially State-Owned Enterprise while developing or analyzing the implementation of ERP system. Future research can consider by adjusting variables and integrating information system success model with related model. Therefore, this study has contributed to the development of ERP technology in developing country. Through various type of company, such as State-Owned Enterprise the model has been tested. Then other type of company can also comply with the variables to enhanced and strengthen the ERP usage to gain company benefit.

2 Literature Review

2.1 Enterprise Resource Planning

ERP is an integrated system built by a business packaging application solution. An ERP could enable organizations to integrate business processes and company performance, distribute the data easily, and manage all the resources. ERP concept is a technology that integrates business processes and company management, within ERP concept the business activities in a company can meet the required and meet the needs of the company goal [1]. The function of ERP is to standardize, simplify, and integrate business processes with various human resources, financial resources, and distribution [2]. ERP is an integrated system used by companies to integrate all resources. The use of an ERP system will facilitate the planning and management of company resources. With an ERP system, it is possible for each department in the company to be connected to the same system [3].

2.2 Information System Success Model

There are several variables in the information system success model. The variables define as follows:

1. System Quality
The quality of the system is used in measuring the quality of the information system itself [8]. Quality the system can be judged by how well the software or hardware is used. The quality of the system has six measurement indicators, namely system flexibility, system integration, response time, error repair, convenient access, language [10].
2. Information Quality (Information Quality)
Information quality measures the output quality of information systems [8]. The quality of information can be judged by how precisely the information produced, the quality of information is measured subjectively by the user. Information quality has five measurement indicators, namely completeness, accuracy, reliability, data that is always updated, the form of output [10].
3. Service Quality
According to [3], service quality is a comparison between perceived service quality and expected service quality [8]. Service quality has three measurement indicators, namely assurance, system empathy, and system response [11].

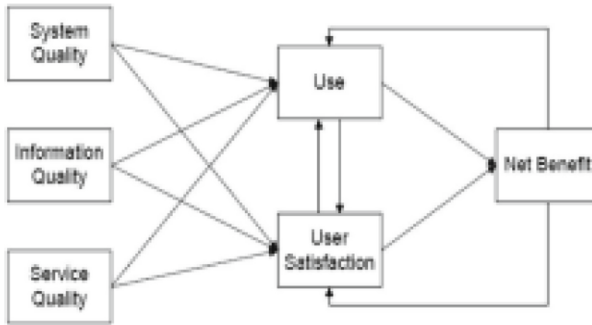


Fig. 1. Information System Success Model

4. Use

Usage (use) referred to here is the use of information systems against the system itself. Usage has two measurement indicators, namely the use of daily time and frequency of use of the system during work [10]. But the researchers added two indicators in the use variable, namely functionality and user ability.

5. User Satisfaction

User satisfaction is the response given by the user after using the system. User satisfaction has two measurement indicators, namely information satisfaction and overall satisfaction [11].

6. Benefits (Net Benefits)

Net benefits are benefits that are felt by individuals and organizations after implementing information systems. The advantage of having five indicators is adapted from the perceived usefulness measure, namely the speed of work achieved, job performance, effectiveness, ease of work, and usefulness in work [7]. The original model from Delone and McLean theory are seen in Fig. 1 [8]. Then the proposed model is shown in Fig. 2.

2.3 Trustworthiness

Trust was recognized as a critical element in all organizations to promote communication, competitiveness and productive relationships [9]. Trust could improve organizational performance through a several mechanisms [10]. Other studies stated that trust is also a fundamental factor in building a sustainable competitive advantage system. Besides that, trust also creating a more efficient and effective organization structure [11]. Some findings in previous research stated that trust is one of important factors regarding the determination of the successful system adoption [12]. Many studies and researches said about the important of trust, especially in system adoption. Trust also believed had a potential influence to the benefit of the company. Therefore, author decided to add this variable to the new enhanced model.

3 Methodology

This research uses questionnaire to assess information for all ERP users in several State-Owned Enterprise in Indonesia. From the total 300 questionnaire that have been spread out, 240 of them are completed. From the model that have been developed, fourteen hypotheses have developed. This study uses Smart PLS and SPSS to analyze the data.

From the proposed model, authors developed fourteen hypotheses. The hypotheses are described as follows:

1. Information Quality has significant impact to satisfaction
2. Information Quality has significant impact to trust
3. Information Quality has significant impact to use / intention to use
4. System Quality has significant impact to satisfaction
5. System Quality has significant impact to trust
6. System Quality has significant impact to use / intention to use
7. Service Quality has significant impact to satisfaction
8. Service Quality has significant impact to trust
9. Service Quality has significant impact to use / intention to use
10. Satisfaction has significant impact to trust
11. Trust has significant impact to use / intention to use
12. Satisfaction has significant impact to benefit
13. Trust has significant impact to benefit
14. Use / Intention to Use has significant impact to benefit.

4 Data Analysis

The enhanced model than examined by evaluating each variable. Seeking the relationship and the correspondent of each dependent and independent variable. Afterwards, authors described the characteristics of each variable. The next step is finding the significant effect of the relationship in in the variables. The first data analysis is assessing the descriptive statistics.

1. Descriptive Statistics
Analyze data by describing and representing the general characteristics to make a general conclusion. See Table 1.
When the Standard Deviation is low, it is indicated that the distribution of the answers is narrow. It is also indicated that answers from the respondents are almost same. Skewness value is < 2 indicates the distribution is normal.
2. Reliability Test
Assess the reliability of the data by checking the coefficient of composite reliability. See Table 2.
All variables in the research are reliable can be seen from the result of composite reliability test that result more than 0.7 (Composite Reliability should be > 0.7).
3. Determination Test
Predict how much independent variable influence dependent variable. The variables of the model have medium and strong determination value. The determination test is shown in Table 3.

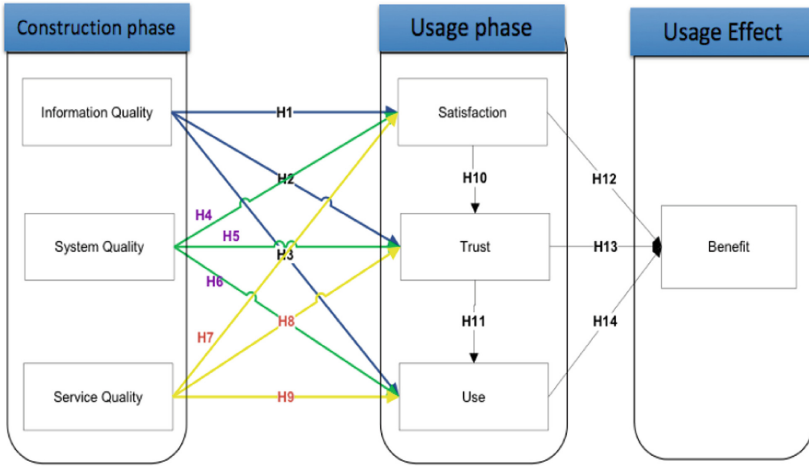


Fig. 2. Enhanced Information System Success Model

Table 1. Descriptive statistics

Variable	Mean	Standard Deviation	Skewness	Conclusion
Information Quality	3.72	0.909	-0.885	Normal
System Quality	3.61	0.942	-0.881	Normal
Service Quality	3.78	0.923	-0.773	Normal
User Satisfaction	3.66	0.748	-0.779	Normal
Trust	3.89	0.901	-0.365	Normal
Intention to Use	4.00	0.740	-1.163	Normal
Net Benefit	4.01	0.733	-0.657	Normal

4. T-test

The T-test conducted to explain significant differences between group/variables. Before examining the t-test, this study has defined the T-table, and the value of T-table is 1,68. Before assessing T-value, researcher should take a look to T-table and determine the T-table. The relationship identified as influence when the value of t-statistics are exceed the t-table. Table 4 shows that several path relationships are found significant and the others are not significant. See Table 4.

Table 2. Reliability Test

Variable	Composite Reliability	Critical Value	Conclusion
Information Quality	0.838	> 0,7	Reliable
System Quality	0.723		Reliable
Service Quality	0.885		Reliable
User Satisfaction	0.894		Reliable
Trust	0.899		Reliable
Intention to Use	0.864		Reliable
Net Benefit	0.886		Reliable

Table 3. R-Square Test

Variable	R Square
Information Quality → Intention to Use	0.330872
Service Quality → Intention to Use	
System Quality → Intention to Use	
User Satisfaction → Net Benefits	0.417397
Trust → Net Benefits	
Intention to Use → Net Benefits	0.760047
Information Quality → User Satisfaction	

5 Result and Discussion

Based on the result of statistical analysis, all the variables found to be reliable. Almost of the T-value score of each relationship is significant, it means that the model is quite efficient. The descriptive statistics of the model found that the model have normal distribution, with the narrow standard deviation. The value of determination showed that the model is in medium determination value. In this section, author also said about the analysis of the path coefficient, to find out how strong the relationship between variables or constructs. The relationship is strong when the value is > 0.1 . Model have a strong relationship between variable when the value of path coefficients are exceed 0.

Table 4. T-value Test

Path	T-Statistic	Conclusion
Information Quality → Satisfaction	4.155715	Significant
Information Quality → Trust	5.764240	Significant
Information Quality → Intention To Use	0.115016	Not Significant
System Quality → Satisfaction	0.328752	Not Significant
System Quality → Trust	3.652112	Significant
System Quality → Intention to Use	5.776967	Significant
Service Quality → Satisfaction	4.503303	Significant
Service Quality → Trust	5.772131	Significant
Service Quality → Intention to Use	3.719763	Significant
User Satisfaction → Trust	2.596689	Significant
Trust → Intention to Use	3.655212	Significant
Satisfaction → Net Benefits	2.352781	Significant
Trust → Net Benefits	4.912194	Significant
Intention To Use → Net Benefits	3.378994	Significant

6 Conclusion

An enhanced information system success model had been built through deep analysis to the complex variables in term of critical success factor in ERP implementation. Trust is the main concern in new enhanced model. Trust found to be critical factor that couldn't be separated from the ERP success model (Table 5).

User satisfaction, trust and intention to use found to be a significant impact influencing net benefit of the company. Several factors in construction phase, didn't have significant impact to those factors in the implementation process. To reach a successful ERP implementation, a company or organization should take a deep intention to those factors that influence the company benefit that will lead to company success. The proposed ERP Success Model found to have a big role in ERP implementation. Each company or organization should take a look to the process that should be evaluate to gain a successful ERP implementation.

Table 5. Hypothesis testing by examining Beta value

Path	Bheta Value	Critical	Conclusion
Information Quality -> Satisfaction	0.410215	> 0,1	Strong
Information Quality -> Trust	0.662108		Strong
Information Quality -> Intention To Use	-0.027283		Weak
System Quality -> Satisfaction	-0.025308		Weak
System Quality -> Trust	0.421318		Strong
System Quality -> Intention To Use	0.194787		Strong
Service Quality -> Satisfaction	0.576812		Strong
Service Quality -> Trust	0.476120		Strong
Service Quality -> Intention To Use	0.383085		Strong
Satisfaction -> Trust	0.643344		Strong
Trust -> Intention to Use	0.528812		Strong
Satisfaction -> Net Benefit	0.601862		Strong
Trust -> Net Benefits	0.324389		Strong
Intention To Use -> Net Benefits	0.405848		Strong

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