

Information System and Service Quality: An Empirical Study of Their Impact on End-Users Satisfaction ERP Systems

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Abstract: ERP systems are integrated information systems that can be applied in both business and non-business organizations. For business organizations it covers the entire functional enterprise that includes accounting and finance, production, sales, purchasing, personnel and other functions. These functions are separated by software modules and interconnected with the integrated data center. Implementation of ERP systems does not always provide satisfaction for end-users. This paper examines the quality of information systems and service that impact on end-user satisfaction, specifically banking companies located in Pekanbaru, Indonesia. Data analysis results reveal that the information systems and service quality partially affect end-users' satisfaction with ERP systems and thus these findings, remind the designers of ERP systems to improve the quality information systems and the availability of user friendly service.

Keywords: *ERP system, service quality, ends users, satisfaction*

1. INTRODUCTION

The Rapid growth of technology along with the increasing complexity of business necessitates deeper understanding of information systems and their quality. Fast and accurate information is needed in managing daily activities, thus it becomes imperative to create new technologies to meet those needs. ERP (Enterprise Resource Planning) is a concept for planning and managing a company's resources. ERP consists of 3 elements: Enterprise, Resource, and Planning, which emphasize aspects of enterprise resource planning and analysis such as Financial, Accounting, Human Resources, Supply Chain, and etc.

ERP is the integrated system that aims to encapsulate existing business processes to collaborate more efficiently and effectively. The system is supported by information technology that can generate information to increase a company's competitiveness. The ERP concept can be run well, if supported by a set of applications and computer infrastructure—both software and hardware so that data processing and information can be done and integrated easily.

This study was conducted specifically on the existing banking sector located in Pekanbaru, Indonesia which use SAP and ORACLE as their ERP systems. Brief interview results of some respondents reveal the level of respondent satisfaction is not optimal because of the license price per-user. Furthermore, consultant fees are relatively expensive.

In the case of replacement or upgrade, the systems require enormous expenditures and take a long time.

The aforementioned issues are important to examine in order to discover what factors cause dissatisfaction of end-users of ERP systems. The two factors that need to be examined are: the quality of the systems and the information system service. These factors will usually determine the level of user satisfaction with the system itself. The quality of any information system develops through phases of quality control and quality assurance. These phases ensure the quality of the information systems that have been produced, or have passed the development phase. It is important to examine the aforementioned issues to discover the factors that contribute to the dissatisfaction of end-users of the ERP system.

According to Davis et al (1989) [2], users view ease of use of an information system as a primary measure of its quality.

DeLone and McLean (1992) [3] define the quality of an information system by the quality of the individual characteristics of the system itself. On the other hand, quality information service is determined by user perception of the service provided by the application system.

Systematically this paper is divided into sections as follows: section 2 describes the research background; section 3 introduces the research method; Section 4

describes and discusses the results; and section 5 concludes the paper.

2. LITERATURE REVIEW

2.1 Quality information system and End-user satisfaction

In order to go deeper into DeLone and McLean's findings, Chin and Todd (1995) [1] found that job performance improves as user-friendliness and understanding of the application improves. They emphasized the ease of understanding and using an application system which in turn improves job performance.

It is noteworthy that the issue of ease of use of application systems has gotten attention from several researchers (Segars and Grover, 1993[11]; Chin and Todd, 1995[1]; McHaney and Cronan, 2001)[7]. Furthermore, the higher quality information systems will certainly produce higher quality information output because of the quality of the information and the output resulting from the information system used (DeLone and McLean, 1992)[3]. Various studies on the satisfaction of users of information systems have shown that the quality of the information systems affect the satisfaction of users (McKiney et al, 2002[8]; Rai et al, 2002[10]; McGill et al, 2003[6]; Livari, 2005[5]).

2.2 Quality information service and End-user satisfaction

In general, the quality of a service is a reliable measure of survival in an increasingly competitive environment. Service quality has five basic elements: Reliability, Assurance, Tangible, Empathy, and Responsiveness. To the degree that these 5 elements are addressed, a customer will move toward satisfaction.

In the context of implementation ERP systems the five elements of service quality have to exist in order to serve end-users. Reliability refers to the ability of ERP systems to deliver accurate service to end-users. Assurance refers to the ability of ERP systems to guarantee end-users that the system works well. Tangible refers to everything that is tangible to end-users of a given system. Empathy refers to the attention that system technicians give to end-users. This empathy practice includes listening, helping users to find solutions to their problems, understanding user anxiety, and providing ample time with the user.

Responsiveness refers to the action of system technicians in responding to end-users in a timely fashion. The level of responsiveness can be tested with questions, such as how much interest the technicians have in the difficulty experienced by users, how skilled are technicians at helping users find solutions to their problems, how responsive are they to users' complaints, etc. The studies of Myers et al (1997)[9]; Istianingsih and Utami (2009)[4]; Yang et al (2004)[12] clarified that quality service has a definite affect on users' satisfaction with any information system.

3. RESEARCH METHOD

3.1 Respondents and Data Collection

This study was conducted on eight banking companies operating in Pekanbaru, Indonesia with consideration that banking companies use large amounts of advanced web-based information technology in the data processing of their customers. The banking companies in this study were BCA, BRI, Mandiri, CIMB Niaga, Permata, Danamon, Muamalat, BRI Syariah with a total of 80 respondents whose duties are related to information technology including: tellers, customer service agents, and others.

3.2 Measures of the Constructs

There are three constructs in this research model: one dependent construct and two independent constructs. Measurements of the three constructs are adopted from previous research, its reliability and validity have been adequately tested. End-users' ERP system satisfaction is a dependent construct, consisting of 11 questions using a 5 Likert scale; quality information system and service quality are the independent constructs. The quality information system construct consists of 6 questions and the service quality construct consists of 15 questions all using a 5 Likert scale.

The indicators of end-user's satisfaction construct are content, accuracy, format, ease of use, and timeliness. The quality information system construct indicators are flexibility, ease of use, and reliability. Next, the service quality construct indicators are tangible, reliability, responsiveness, assurance, and empathy. Definitions and indicators of each construct are presented in table 1 below.

Table 1. The Operational Definitions of the constructs

Variables	Definitions	Indicators	Scale	Items question
End-user's ERP system satisfaction	End-User's ERP system satisfaction is the satisfaction measured from the successful of information systems meet user expectations.	<i>Content, Accuracy, Format, Ease of use, and Timeliness</i>	Likert	11 items
Quality information systems	Quality information system is the quality of accounting software used viewed from the perception of the user.	<i>Flexibility, Ease of use, and Reliability</i>	Likert	6 items
Service quality	Service quality is a concrete perception of the service quality provided by the application system provider.	<i>Tangibles, Reliability, Responsiveness, Assurance, and Empathy</i>	Likert	15 items

3.3 Data Analysis

Data questionnaires filled out and returned by respondents were processed using the multiple regression equation as follows

$$\text{End-user's satisfaction} = a + \beta_1 \text{ Quality information system} + \beta_2 \text{ Service quality} + e$$

Where:

a = constant;

β_1, β_2 = regression coefficient;

e = standard error

4. RESULTS AND DISCUSSION

4.1 Result

The demographic information of respondents such as gender, age, work duration, and education are presented in table 2 and Data reliability and validity test results are presented in table 3. After testing the data quality, classical assumptions tests of normality, auto-correlation, multicollinearity, and heteroscedasticity were completed. Test results are presented in table 4.

Hypothesis testing using a multiple regression model shows that the quality of an information system and the quality of service influence the end-user's satisfaction of the application system. Table 5 below presents the results of the hypothesis test.

Table 2. Respondents Characteristic

Gender	%	Ages (Years)	%	Work duration	%	Software uses (years)	%	Education	%	Majors	%	Training	%
Male	65	21-30	16,25	1-2	2,5	<1	10	High school	7.50	IT	21.25	Yes	85
Female	35	31-40	41,25	3-4	23,75	1-2	32.5	Diploma	28.75	Non IT	78.75		
		41-50	30	5-6	30	>2	57.5	Bachelor	48.75			No	15
		>50	12,5	>6	45			Master	15.00				
Total	100	Total	100	Total	100	Total	100	Total	100	Total	100	Total	100

Table 3. Data reliability and validity test results

Validity test results												Reliability test results	
System quality(X1)		Service quality (X2)						End-user's satisfaction (Y)				Variables	Cronbach's Alpha
Item	r-value	Item	r-value	Item	r-value	Item	r-value	Item	r-value	Item	r-value		
X1.1	0,403	X2.1	0,355	X2.7	0,319	X2.13	0,375	X3.1	0,419	X3.7	0,628	Quality information system	0,651
X1.2	0,562	X2.2	0,41	X2.8	0,468	X2.14	0,446	X3.2	0,594	X3.8	0,66		
X1.3	0,58	X2.3	0,474	X2.9	0,314	X2.15	0,61	X3.3	0,494	X3.9	0,472	Service quality	0,706
X1.4	0,717	X2.4	0,553	X2.10	0,247			X3.4	0,38	X3.10	0,47		
X1.5	0,672	X2.5	0,468	X2.11	0,423			X3.5	0,432	X3.11	0,453	End-user's satisfaction	0,736
X1.6	0,718	X2.6	0,597	X2.12	0,519			X3.6	0,756				
All items are valid, the r-value is greater r-table (0.2199)												All variables cronbach's alpha > 0,60	

Table 4. The classical assumptions test results

Assumptions tested	Results	Descriptions
Normality	Asymp. Sig. = 0,975 > 0, 05	Data is normally distributed
Multicollinearity	Tolerances of quality information system and service quality are respectively 0.937. Meanwhile the VIF of both variables are 1.067.	The model is free from multicollinearity.
Auto-correlation	dw = 1,181	The model is free from auto-correlation.
Heteroscedasticity	Scatterplots graphic show several points that are scattered randomly.	The model is free from hetero-scedasticity
Coefficient determinants	Adjusted R ² = 0,190	19% of end-user's satisfaction can be explained by the quality information systems and service.

Table 5. Regression Analysis Results

Model	Coefficient	T	Sig.	Hypothesis	Conclusions
(Constant)	1.720	3.009	.004	-	-
Quality information systems	.281	2.559	.012	H ₁ accepted	Significant
Service quality	.409	2.978	.004	H ₂ accepted	Significant

4.2 Discussion

The regression analysis results in table 5 above show that the quality of information systems and service quality have a significant affect on end-user satisfaction of the application system in case of the ERP system. These results are consistent with the previous studies mentioned in section 2.1 and 2.2. When users encounter difficulties with the information system, they will certainly not experience high satisfaction. Thus, qualified information systems have to meet flexibility, reliability, ease of use criteria. In terms of information systems services linked to end-user satisfaction, better service of an information system which is qualified by meeting tangible, reliability, responsiveness, assurance and empathy criteria will be much more likely to satisfy end-user expectations which in turn will satisfy the end-user.

5. CONCLUSIONS

This study examines the end-user's satisfaction on information systems and the factors that influence it. The focus of this study was the quality of the information system itself and service quality. To test and analyze the effect of these two factors toward end-user's satisfaction, a multiple regression model was used because it has two independent variables and one dependent variable. The regression results provide empirical evidence that the quality of information systems and the quality of information systems services affect the end-user's satisfaction. These findings reinforce the results of previous research. There are many different factors that relate to end-user satisfaction of information systems. One limitation of this study was that only two of these factors were tested. Based on these conclusive results, the authors

of this study suggest that information systems continuously upgrade their product and service, especially considering the current rate of development and changing dynamics of information technology.

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