

The Accountant Satisfaction in Using ERP Systems

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Abstract—Although studies of the benefits of Enterprise Resource Planning (ERP) have been done before, the analysis of accountant satisfaction models in using ERP systems has not been explored specifically from the perceptions of accounting benefits, operational benefits, individual productivity, and managerial benefits. There has been significant growth in the use of ERP systems in Indonesia. Therefore, this study proposes a model of the accountant satisfaction in using the ERP systems. The population of this study is the accountants working in Jakarta. The data are collected from ERP users in several companies in Jakarta by using a questionnaire with snowball sampling method. As much as 282 respondents return the questionnaire. The analysis of the proposed model is done by Partial Least Square (PLS). The results of the analysis provide support to the proposed model that accounting benefits, operational benefits, individual productivity, and managerial benefits are indicators that measure user satisfaction of ERP systems. The expected theoretical contribution of the results of this study is to provide insight into the system user satisfaction model, apart from the practical contribution for ERP provider companies for paying attention to the factors affecting ERP user satisfaction.

Index Terms—Enterprise Resource Planning (ERP), ERP benefits, End User Satisfaction

I. INTRODUCTION

AS information and technology develop, the growth of the use of software applications and Enterprise Resource Planning (ERP) systems in Indonesia has also increased. As reported by Ref. [1] that the consumption of ERP software and products had increased from Rp3 200 billion for software and Rp960 billion for ERP software in 2013 to Rp3 500 billion for software and Rp969.12 billion for ERP software in 2014. In addition, the growth of ERP spending by Indonesian companies is also seen from the results of an analysis conducted by Ref. [2]. The highest expenditure is on the budget for ERP systems other than data management master, and CRM. It is predicted

that by 2019 Indonesian ERP consumption will reach US\$3.86 billion [3].

The largest contribution to the growth rate of software consumption is derived from ERP products that are made by the majority of medium-sized companies. This means that many companies in Indonesia are willing to spend a lot of money to invest in ERP products. This is quite surprising because the cost of ERP implementation is very expensive. This will make it difficult for medium-sized companies to face obstacles in funding. Moreover, medium-sized companies should be careful in making IT investments [4]. However, the phenomenon can be explained based on previous research results. It reveals that the use of the ERP systems provided many benefits for the corporate users such as helping companies to improve their supply chain management [5], improving productivity and speeding up the company's operational work processes [6], improving operational efficiency and effectiveness as business process supervision becomes integrated [7], and standardising business processes to facilitate managerial activities [8]. In addition, other research indicates that ERP systems implementation improves the operational cost efficiency of the company [9] and the quality of business decisions due to business model integration [10].

From the growth of ERP users in Indonesia, it is interesting to get empirical evidence of accountant satisfaction in using the ERP system. This is because accountants in their daily tasks will interact with the system so that they will feel the benefits from the use of ERP systems directly. Moreover, ERP system has changed the way the businesses do the collection, processing, and distribution of data, so the accounting process changes automatically. In addition, based on a review of some previous research results, it reveals the results of a survey regarding the benefits perceived in the field of an accounting [11, 12]. Although it has been mentioned, the previous research has found empirical evidence about benefits perceived

by users [5, 6, 9, 13–15]. However, the model of the accountant satisfaction related to each benefit has not been mentioned.

The underlying motivation of companies adopting ERP systems is that they will gain many benefits. The results of previous studies on the use of ERP by companies are done differently. However, it can be concluded that the use of ERP has benefited its users. The results presented by previous studies indicated that the potential benefits by the use of ERP could be grouped into operational, managerial, strategic, IT infrastructure, and organizational benefits [16]. In addition, other studies revealed that ERP also provided benefits to accounting activities [11, 12], individual productivity, and organizational productivity [17]. The results of other empirical studies showed that the use of ERP could improve the efficiency of cycle and time of production and the increase in the number of production per month [6]. ERP also generated cost efficiency [9, 13].

For large companies, ERP helps to smoothen and integrate business process activities [14]. The same thing also happens under the supervision of the flow of goods or distribution [5, 15]. The benefits of ERP in accounting activities are the ease of preparing financial statements, obtaining updated, and completing the information, so it is easier for decision-making [11]. Another benefit of accounting activities is the efficiency of employee time and expense [12].

In addition to benefits issues, previous studies also address other important issues in the use of the system. It can be user satisfaction based on the IS Success Model. User satisfaction is measured by the perception of ease of use and design of the system [18]. The ease of use and quality of information generated by the system is believed to be the factor that determines the level of user satisfaction of the system [19]. It is further emphasized that user awareness about the benefits by using the new system also contributes to user satisfaction [20].

Based on the results of the previous studies [11, 12], it attempts to formulate a model of the accountant satisfaction in using ERP systems. Although the previous study on accounting benefits and user satisfaction has been done by Ref. [12], this study emphasizes more on the perspective of accountant functions in daily business processes. Hence, the instrument used is a combination of survey results of Refs. [11, 12, 21, 22]. Besides, this study expands the previous study by examining the ERP user satisfaction model especially by differentiating it into several benefit groups such as accounting benefits, operational benefits, individual productivity, and managerial benefits in the perspective of accountancy. The results of this study are expected

to provide practical and theoretical contributions to the study and practice of ERP particularly in studying the benefits to accountants and the accountant’s satisfaction model in using ERP systems.

This study aims to analyze the perceptions of accountants about the benefits of using ERP. It is divided into several benefits such as accounting, operational, individual, and managerial. In addition, the dimension used can predict the ERP user satisfaction model. Thus, the research question can be formulated as follows:

- 1) What are the benefits perceived by the accountant in using the ERP system?
- 2) What are the factors that influence the accountant’s satisfaction model in using the ERP system?

II. LITERATURE REVIEW

The study uses an end-user satisfaction model for the ERP environment adopted from Ref. [21]. The theory underlying the satisfaction model is the IS Success Model by Delone and McLean. Based on that user satisfaction theory, it is measured through the perception of ease of use and the design of the system [18]. The ease of use and quality of information generated by the system is believed to be a factor that determines the level of user satisfaction of the system [19]. In addition, user awareness about the benefits by using the new system also contributes to the user satisfaction [20].

From the diversity of ERP users, this study specializes in users by accountants for daily purposes. Previous surveys have shown that ERP provides potential benefits specifically for accounting activities [11, 12]. Moreover, the previous ERP-related literature concludes that the benefits from the use of ERP can be grouped into operational, managerial, strategic, IT infrastructure, and organizational benefits [16]. Other studies have also shown that ERP deals with individual productivity, organizational productivity, and managerial activities [5, 6, 9, 14, 15, 17].

Thus the model of this study can be formulated in Fig. 1. Then, the hypotheses are as follows:

- H1: There is a relationship between perception of accounting benefits and accountant satisfaction.
- H2: There is a relationship between perception of operational benefits and accountant satisfaction.
- H3: There is a relationship between perception of individual benefits and accountant satisfaction.
- H4: There is a relationship between perception of managerial benefits and accountant satisfaction.

TABLE I
OPERATIONAL VARIABLES.

Accounting Benefits describe the benefits received by accountants in daily accounting activities [11, 12]	
No.	Description
AB1	The ERP system has accelerated the completion of monthly accounting task
AB2	The ERP system has accelerated the completion of the annual accounting task
AB3	The ERP system has accelerated the process of daily transactions
AB4	The ERP system has accelerated the process of compilation of information especially financial statements
AB5	The ERP system has improved reporting quality especially financial reporting
AB6	The ERP system has improved decision-making process
AB7	The ERP system has provided more updated and accurate information
Operational Benefits describe the perceived benefits of accountants in the form of support for daily activities especially regarding interactions between units and devices [11, 12]	
OB1	The ERP system has provided better interdepartmental coordination
OB2	The ERP system has improved internal communication
OB3	The ERP system has improved system integration
OB4	The ERP system has reduced errors in logistics
OB5	The ERP system has improved financial analysis skills
OB6	The ERP system has improved information flexibility
OB7	The ERP system has provided the flexibility of accessing financial information
Managerial Benefits describe the benefits perceived by accountants in the managerial activities especially regarding control [22]	
OP1	The ERP system has improved management control
OP2	The ERP system has increased the company’s cash flow
OP3	The ERP system has increased company growth
Individual Benefits explains the benefits perceived by accountants regarding productivity improvement in doing their daily tasks [22]	
PR1	The ERP system has helped the user complete more work
PR2	The ERP system has helped the user execute task faster
PR3	The ERP system has increased work productivity
Accountant Satisfaction describes the indicator of accountant satisfaction in using ERP systems especially in technical problems in interaction with the system [21]	
ST1	The ERP system has fulfilled the company’s needs
ST2	The ERP system is user-friendly
ST3	The ERP system has eliminated errors or significant distractions
ST4	The ERP system has provided sufficient help information
ST5	The ERP system is easy to learn at the beginning of the implementation

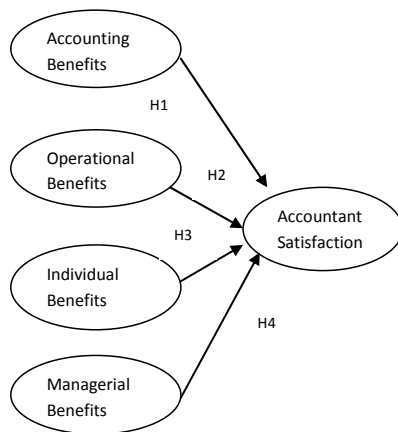


Fig. 1. Proposed research model.

III. RESEARCH METHOD

Data collection is done by survey by using questionnaire. Respondents are corporate accountants who use ERP systems. The research instrument consists of items describing the research variables: accounting

benefits, operational benefits, managerial benefits, and individual productivity. The operations of each variable are presented in Table I. Moreover, the measurements of all variables are by using 5-point Likert scale from 1 for “strongly disagree” until 5 for “strongly agree.” The high score shows respondents perceive high value and vice-versa.

Data analysis uses descriptive analysis method and structural equation model with the Partial Least Square (PLS). The results of data analysis is grouped into two parts, namely descriptive analysis and research model testing of the accountant satisfaction in using ERP systems.

IV. RESULTS AND DISCUSSION

A. Descriptive Analysis

The survey uses a questionnaire distributed with snowball sampling to accountants working in Jakarta. The final result has about 282 questionnaires. All respondents have an accounting background working with ERP system in 43 companies in Jakarta. Thirty-two percents of respondents occupy manager position

TABLE II
DEMOGRAPHICS OF THE RESPONDENTS.

Position	Total	%
Manager	91	32.3
Staff	191	67.7
Total	282	100.0
Department	Total	%
Accounting	222	78.7
Finance	35	12.4
Purchasing	25	8.9
Total	282	100.0

TABLE III
ERP USAGE DESCRIPTIONS.

Vendor	Total	%
AXAPTA	11	4
IFS	10	4
INFOSYS	42	15
JD Edward	5	2
MYOB	42	15
Oracle	51	18
SAP	111	39
VHP	10	4
Total	282	100
Go live	Total	%
< 2001	30	11
2001 – 2010	169	60
> 2010	83	29
Total	282	100
Modul	Total	%
Financial Accounting	235	83
Fixed Asset Register	72	26
Management Accounting	120	43
Costing	84	30
Production	124	44
Logistics	75	27
E-commerce	120	43
Purchase	90	32
Payroll	81	29
Quality Management	60	21
Sales Marketing	46	16
Other Modules	42	15
Total	282	100

and the remaining is staff. The demographics of the respondents are in Table II.

The majority of companies are SAP users. In general, the use of ERP has started before 2010 (71%). Then, financial accounting module is a module used by almost all respondents (83%), while other modules such as management accounting, production, and e-commerce are used by the remaining 43% of respondents. It can be seen in Table III.

The results of the analysis show that the motivation to implement the ERP is to integrate the applications. Then, it is followed by the increased activity in the business process as seen in Table IV.

The following are the results of the analysis for each latent variable, accounting benefits, operational benefits, individual productivity, and managerial bene-

TABLE IV
IMPLEMENTATION MOTIVATION.

Motivation	Total	%
Integration of Applications	159	56%
Corporate information systems integration	21	7%
Real-time Information	15	5%
Enhancing business process activities	63	22%
Increasing Revenue	12	4%
Enhancing Decision-making process	3	1%
Competitive Advantage	9	3%
Total	282	100%

TABLE V
PERCEIVED ACCOUNTING BENEFITS (ACB).

Code	Indicators	Mean
AB1	Accelerate the completion of monthly accounting	3.61
AB2	Accelerate the completion of annual accounting	3.68
AB3	Accelerate the process of daily transactions	3.67
AB4	Accelerate the process of compilation of information especially financial statements	3.42
AB5	Improve reporting quality especially financial reporting	3.29
AB6	Improve decision-making process	3.15
AB7	Have updated and accurate information	3.40
Average		3.46

TABLE VI
PERCEIVED OPERATIONAL BENEFITS (OPB).

Code	Indicators	Mean
OB1	Have better interdepartmental coordination	3.23
OB2	Improve internal communication	3.19
OB3	Improve system integration	3.60
OB4	Reduce errors in logistics	3.12
OB5	Improve financial analysis skills	3.48
OB6	Improve information flexibility	3.48
OB7	Provide the flexibility of accessing financial information	2.78
Average		3.27

fits. As summarized in Table V, all of the variables have greater mean values than 3 in the range of 1 to 5. This shows that the respondents perceive the benefits and the user satisfaction at a moderately high score. The indicator that best describes the latent variable accounting benefits is shown in Table V. It is the completion of the daily, monthly, and annually accounting cycle.

The results of the analysis for user perceptions of operational benefits are not as high as the perception of accounting benefits. As described in Table VI, the best explanatory indicator of operational benefits variables is ERP helps the system integration.

Furthermore, the results of the analysis for user perceptions of managerial benefits are also not as high as the perception of accounting benefits or operational benefits. It is shown in Table VII. The best explanatory indicator of managerial benefits is obtained from the

TABLE VII
PERCEIVED MANAGERIAL BENEFITS (MGB).

Code	Indicators	Mean
OP1	Improve management control	3.30
OP2	Increase the company’s cash flow	3.09
OP3	Increase company growth	3.15
Average		3.18

TABLE VIII
PERCEIVED INDIVIDUAL BENEFITS.

Code	Indicators	Mean
PR1	More work completion	3.44
PR2	Faster task execution	3.70
PR3	Increasing work productivity	3.59
Average		3.57

TABLE IX
PERCEIVED USER SATISFACTION (SAT).

Code	Indicators	Mean
ST1	The fulfillment of the company’s needs	3.27
ST2	User-friendly	3.44
ST3	No errors or significant distractions	3.63
ST4	Sufficient help information	3.63
ST5	Easy to learn in the beginning of the implementation	3.28
Average		3.45

TABLE X
VALID INDICATORS.

Code	Indicators
AB2	Accelerate the completion of annual accounting
AB4	Accelerate the process of compilation of information especially financial statements
AB5	Improve reporting quality, especially financial reporting
OB2	Improve internal communication
OB4	Reduce errors in logistics
OB5	Improve financial analysis skills
OP1	Improve management control
OP2	Increase the company’s cash flow
OP3	Increase company growth
PR1	Complete more work
PR2	Have faster task execution
PR3	Increase work productivity
ST1	Fulfill the company’s needs
ST2	Have user-friendly function and design
ST3	Have no errors or significant distractions
ST4	Have sufficient help information
ST5	Make it easy to learn at the beginning of the implementation

TABLE XI
AVE AND COMPOSITE RELIABILITY.

	AVE	\sqrt{AVE}	Composite Reliability	R^2
ACB	0.778	0.882	0.913	0.000
IPR	0.645	0.803	0.845	0.000
MGB	0.695	0.833	0.870	0.000
OPB	0.777	0.881	0.913	0.000
SAT	0.607	0.779	0.885	0.482

improvement in the management control.

Moreover, individual benefit is the highest variable perceived by the user as shown in Table VIII. The fast execution of task indicator and increasing work productivity are the best explanatory indicator for individual benefits.

Finally, users’ perceptions of the satisfaction in using ERP give high moderate values. It is especially indicator of no appearance of meaningful errors in the system and the availability of the help functions for the users. Those are the best explanatory to explain ERP user satisfaction level (see Table IX).

B. Accountant Satisfaction Model in Using ERP Systems

The testing of the satisfaction model is done by the PLS method. It is processed using SmartPLS M2 program. The first step is to test the validity of the data by looking at the cut off value in each loading factor in the latent variable. The criterion used is the value of each loading factor that must be above 0.6. Therefore, all indicators that are less than 0.6 is excluded from the analysis.

The results of SmartPLS output indicate that some indicators do not meet the validity criteria so that all indicators with loading factors with less than 0.6 have

been excluded from the analysis. The outcome of the indicators that meet the validity criteria is AB2, AB4 and AB5 for accounting benefit variables, OB2, OB5 and OB6 for variable operational benefits, PR1–PR3 for variable managerial benefits, OP1–OP3 for individual productivity and ST1–ST5 for user satisfaction variables. Thus, the indicator in Table X can be used for further model testing.

The next step is testing the reliability of the AVE and reliability of composite value. It is summarized in Table XI. The AVE value is greater than 0.5 and the value of composite reliability is above 0.9 for all variables. It is seen from the AVE root values that are compared with the correlation values between the variables as shown in Table XII. It shows that the square root value of AVE is greater than the value of the correlation. Considering the results of validity and reliability, it can be concluded that the data can be used for model prediction.

After the validity and reliability testing, the next test is to see the strength of relationships between variables from the value of path coefficient and R square. The results of the SmartPLS output are in Table XIII. It shows that all the relationships are significant at p -value of 0.05 and the statistical t -value is greater than 1.960. Therefore, it can be concluded that the

TABLE XII
THE CORRELATION OF VARIABLE AND THE SQUARE ROOT OF AVE.

	ACB	IPR	MGB	OPB	SAT
ACB	0.882				
IPR	0.501	0.803			
MGB	0.451	0.382	0.833		
OPB	0.635	0.202	0.537	0.881	
SAT	0.604	0.372	0.509	0.602	0.779

TABLE XIII
THE PATH COEFFICIENTS.

	Original Sample	t-Statistics
ACB	0.2737	40.331
IPR	0.1035	20.322
MGB	0.1798	33.759
OPB	0.3105	50.679

satisfaction model can be formed from accounting benefits, operational benefits, managerial benefits, and individual productivity. Based on the value of R-square produced by SmartPLS that is 0.482, it can also be concluded that the relation of user satisfaction variable with the exogenous variable is 48.2%. The relationship of accountant satisfaction model can be seen in Fig. 2.

The results of previous surveys on the accounting benefits of using ERP have inspired this study to assess the factors that make up the ERP user satisfaction. This is for accountants who are directly related to ERP systems. The results of the analysis show that all the elements of benefit are proven to be related to user satisfaction. In particular, the highest benefit perceived by the accountant is the individual benefit. This is in line with the results of previous studies [22]. This means that the ERP system used has helped them do the task faster because the facilities are provided for faster transaction execution. This explains that the ERP system has assisted individual accountants in performing their daily tasks so that individual productivity can be improved [22]. This means that the ERP system used has helped them do the task faster because the facilities are provided for faster transaction execution. This explains that the ERP system has assisted individual accountants in performing their daily tasks so that individual productivity can be improved.

Furthermore, the results of the model test provide empirical support to IS success theory. The dimensions of benefits perceived by the accountant have represented the quality of the ERP. ERP quality has resulted in the information to improve individual performance within the ERP system environment. As formulated on the IS success model, the successful implementation of the system will lead to user satisfaction.

In addition to individual benefits, accounting benefits

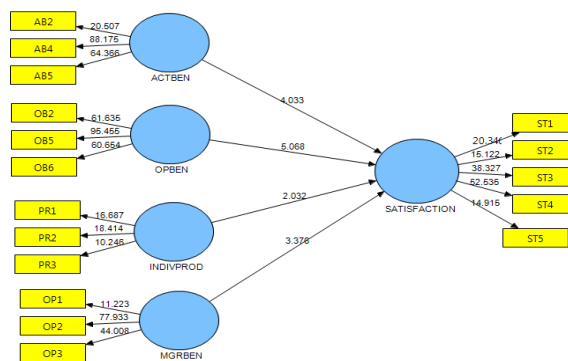


Fig. 2. Accountant satisfaction of ERP systems.

are shown to be perceived high moderate by the accountants. The accounting benefit that becomes the highest benefit is to assist accountant in completing financial reporting activities. For example, there are the completion and preparation of daily, monthly, and yearly financial statements. Next, in operational activities, high perceived benefits are the facilities access to applications due to the availability of an integrated system. It can improve their work skills in conducting financial analysis. This feature helps individual performance in increasing productivity and performing daily tasks more quickly. The use of ERP is believed to improve the quality of the system so that there is no significant disturbance or error comes from the system. They feel they are supported by the availability of adequate assistance.

The results of this study provide empirical support for previous surveys of accounting benefits of ERP implementation in accounting activities [11, 12]. Furthermore, the results of the analysis support the proposed model of accountant satisfaction in using the ERP system. It is related to the perceptual component of the accounting, operational, managerial, and individual productivity benefits [22]. ERP systems have benefited the accounting work in the daily activities of information processing up to the preparation of reports. This result confirms the promise of ERP providers that the ERP application can integrate all business processes. In addition, the result confirms the previous study [6, 11] in performing accounting integration in corporate operations [14, 15].

Respondent’s perception of the satisfaction of ERP usage shows high enough value in satisfaction with system stability, conformity with company requirement, availability of adequate information, and ease of studying ERP. The results provide empirical support for Ref. [21]. It explains ERP user satisfaction that can be assessed through how ERP responds to the needs of a company, the ease of learning, and using the system.

The results of this study are also in accordance with research conducted by Ref. [18] that user satisfaction is determined by how easy the system and the design of the system used is.

Based on the results of user satisfaction analysis of the ERP system, it can be concluded that the average respondents feel the benefits of ERP and get the ERP system. It has met the needs of the company. This is in accordance with Ref. [20] who states that user satisfaction will be influenced by the function of ERP for the company to support the corporate goals.

V. CONCLUSION

The results of this study provide an overview of the benefits of using ERP in the company. The highest perceived benefits of respondents are the ability of ERP to integrate accounting applications and information delivery process for the users of the report. Moreover, there is also efficiency in the process of transaction processing and accounting settlement for daily, monthly, or yearly activities. Then, the effectiveness is derived from the indicators to speed up the process of preparing reports. It provides information and productivity support in decision-making work.

The results of this study contribute theoretically to ERP research and practically to ERP system users regarding increasing user satisfaction. The empirical contribution in the use of various benefits dimensions can predict the user satisfaction of the ERP system. The dimensions have been proven by many IS success model studies. In practical terms, it gives insight for ERP vendors, so they can provide important features for users to support their daily tasks.

However, this study has limitations on results that cannot be generalized to the entire company. It is because the survey is only conducted on users in 43 companies in Jakarta and by snowball sampling. In addition, this study only reveals the benefits that are associated with accounting, operational, and managerial benefits perceived by accountants. It has limited assessment of business processes. Moreover, future research can be done by entering the variable on business process activities more broadly in addition to accounting activities. It can obtain the model of satisfaction in the use of a more comprehensive ERP system for the company in conducting business processes.

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