AIS Quality and Effectiveness of the Decision Making Process in the use of the ERPS

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ABSTRACT

The use of the Enterprise Resource Planning Systems (hereafter, ERPS) in Indonesia showed a significant growth. This growth has lead to the need to have an empirical evidence about the accounting benefits from using that systems. The existences of accounting research on ERPS has created an opportunity for further research on the Accounting Information Systems (AIS) quality and effectiveness in the decision making process related to the level of the use of the ERPS. This research is using alternative methods of Partial Least Square (PLS). The result suggest that the manager's perceptions of the AIS quality affect the effectiveness of the decision making process. The breadth of the use of the ERPS can be a moderating factor in the relationship between manager's perception of the AIS quality and the effectiveness of the decision-making process. Finnally, there was no difference between the perceptions of the different department managers regarding the AIS quality and the effectiveness of the decision making process on the breadth of the use of the ERPS.

Keywords: ERPS capabilities, AIS quality, Decision Making Process Effectiveness, manager perceptions.

1. INTRODUCTION

According to market research of report buyer for information technology (IT), the use of the ERPS in Indonesia in 2009, showed a significant growth rate compared to other ASEAN countries. There are more than 250 companies that have implemented SAP, and more than 100 companies have implemented Microsoft Dynamics AX in Indonesia in 2009. In the same year Metrodata has recorded a market growth of 20-30% per year for the ERPS. This growth has lead to the need to have an empirical evidence about the accounting benefits from using that systems. Besides the large investment, the use of such system has openend a great opportunity for reseach in the accounting field.

Dehning dan Richardson (2002), suggested that there is an opportunity for accounting researchers to investigate the return on investment on IT investments. The need for ERPS research in also emphasized by Hunton et al. (2003), Suton (2006), Moon (2007), Schlichter and Kraemmergaard (2010), Grabski et al.,2011, and Granlund (2011). They stated that there are only few researches that have explored ERPS in accounting discipline. The existences of accounting research on ERPS have created an opportunity for further research on how the level of the use of ERPS will influence the change in the AIS process. Does the change lead to a better quality in the AIS outputs, which lead to the effectiveness of the decision making process by the managers in different departments?

Based on previous studies, the studies about the AIS quality or the effectiveness in the decision making process in relation to the use of the ERPS have not been specifically studied. Therefore, it is necessary to explore the accounting point of view about the influence of the use of the ERPS on the AIS quality and effectiveness in the decision making process related to the level of the use of the ERPS. As a result, the following research question is formulated as follows:

- Is the manager's perception of the AIS quality affects the effectiveness of the decision making process in the use of ERPS?

- Is the breadth of the use of ERPS becomes a moderating factors in relation to the manager's perception of the AIS quality with the effectiveness of the decision making process?

- Are there differences in the managers perceptions of the different departments regarding the AIS quality and the effectiveness of the decision making process and in the breadth of the use of the ERPS?

2. THEORETICAL BACKGROUND

2.1 Theory of Information Systems Success

This study will apply the information system (IS) success model by Delone and McLean (1992) and the model that is proposed by Doll and Torkzadeh(1988) to measure the end user's satisfaction. The measurement consists of five dimensions, namely 1) content, indicates that the systems has provided the information in accordance with the user requirements; 2) accuracy, indicates that the systems has provided accurate information; 3) format, indicates that the system has provided information in the appropriate display format;4) ease of use, indicate that the system is easy to use;

5) timeliness, indicates that the system has provided information in a timely manner.

2.2 The Extent of the Use of The Enterprise Resource Planning System

The extent of the use of the ERPS will vary between companies. This depends on the urgency or the level of the company needs and the availability of funds for implementation. This research will use the capability concept that is proposed by Karimi *et al.*(2007). The capability implies the extent of the use of the ERPS in such company. The difference in the breadth of the use is expected to give a different impact to the company. Further, according to Karimi *et al.* (2007), the extent of the use of the ERPS can be viewed through 1) the number of the functions in the company that is using the ERPS, 2) the number of the divisions or departments that are using the ERPS, and 3) the number of offices that are geographically dispersed in various regions that are using the ERPS.

With the more extensive use of the ERPS the more widely the information is disseminated to all functions of the company. This is important because the information is the key for the decision making process. The wider the use of the ERPS, the more integrated the data that will help the manager in solving the problem and making decisions. Besides, the integrated system is expected to provide a rapid analysis reporting in a timely maner (Gupta, 2000; Shebab *et al.*, 2004).

2.3 The Effectiveness of the Accounting Information Systems and the Decision Making Management

The effectiveness of an information system can be described through a number of different perspectives (DeLone and McLean, 1992). Evaluation of an effective systems can be shown through the output produced as required, increased productivity, improve performance, and increased control over the decision related to the information that is produced by the AIS. Thus, the information generated expected can make the decision making process more effective. The information delivered is easier to interpret and understand, as well as that the dissemination of information to all functional departments could be improved (Ugboma, 2004). Acording to Kim (1988) the assessment of the effectiveness of AIS relies on the use of AIS as perceived by the user regarding the quality of the information produced. The quality of information depends on the reliability, report forms, timeliness and relevance for the decision maker. Nicolao (2000) defined effectiveness of AIS as a decision, the decision maker perceives about the information output generated by the transaction processing system, the management reporting, and the whether the budgeting systems meets their needs in the coordination and the control of tasks.

Nicolaou (2000) and Yeunyong (2007) stated that there is a relationship between the use of an integrated system and the effectiveness of AIS. Alzoubi (2011) found that the use of the ERPS has effected the effectiveness of AIS. The effectiveness of AIS can be described through quality of the accounting information output and the firm's internal control. Other studies have been conducted by Spathis and Constantinides (2004), Spathis (2006), and Spathis and Ananiadis (2005). They examine the reasons why companies convert their conventional information system to ERPS, and how the use of ERPS has brought changes, especially in the accounting process. They found that most benefits perceived from adopting ERPS is for the accounting application integration, increasing flexibility in generating information and improving the quality of financial reporting and decisions with respect to timelines and the reliable accounting information produced. Brazel and Dang (2005) examine the ERPS adoption to the relevance of the information and reliability of the information in financial reporting for external users. They found that after the implementation of ERPS, the company will decreased the reporting lag simultaneously. Whereas Poston and Grabski (2001) have shown that the use of ERPS can reduce costs by increasing efficiency through the computerized system, and improved decision making by providing accurate and timely informations.

Other research on the relationship between ERPS and decision making process has been done by Carton and Adam (2005), Bahrami and Jordan (2009). Carton and Adam's (2005) study result say that the previous studies have only examined only the effect of ERPS on the operating level and only few at the managerial level. While Bahrami and Jordan (2009) showed an improvement in the decision-making process both at at the strategic and operational levels.

However it is not the company's main goal in using the ERPS. Other researcher, Xu*et al.* (2002) has conducted a case study in an Australian company about the quality of the data related to the implementation of the ERPS. They have found out that the quality of the data is important and the main reason for implementing the system.

Sajady et al. (2008) stated that the effectiveness of the AIS depends also on the perception of the decision maker about the usefulness of the information generated by the system. How the information satisfies their needs about the operational processes, managerial reporting, budgeting, and control of the organization. The results of Sajady et al. (2008) indicated that the implementation of AIS will lead to improvements in the process of decision making by managers, internal control and financial reporting quality, and facilitation of the transaction processing companies. Therefore in this study, assessment of the effectiveness of the AIS is based on the user perceptions about the usefulness of the information. Measurements were performed by assessing user's satisfaction for the quality of information, including the form, content, and appearance.

2.4 The Perceive of the AIS Quality and the Decision Making Management Differences

The Previous studies on differences in the manager's perspectives from various departments related to ERPS, showed inconclusive results. Chang (2006), Ifinedo and Nahar (2007), Esteves (2009), have found that there is no differences in the perception of the managers of the various departments in terms of the benefits of information system's implementation. However Holsapple et al. (2006) suggested that user satisfaction was higher in the system level managers than in the non-managers level. Similarly Longinidis and Gotzamani (2009), have found differences in the user's perception of the network departments within the sales and supporting department. Kanellou and Spathis (2011) have also suggested that there is a difference on perception on system performance between IT professional and accountants, but no differences in perceptions regarding the benefits of accounting of the use of ERPS.

Based on the theoretical framework discussed above, the hypotheses are formulated as follows:
H1: AIS quality has positive direct effect on effectiveness of decision making process
H2: More extensive the use of the ERPS mediates the positive direct effect of Manager's perception of the AIS quality on effectiveness of decision making process

H3: There are no differences on manager of different department perceptions regarding the AIS quality and effectiveness of decision making process in the breadth of the use of the ERPS.

3. METHODOLOGY

The data was collected by sending questionnaires by mail or e-mail and sent directly to the companies. This research is using alternative methods of Partial Least Square (PLS). The reason underlying the use of PLS is the small sample size. In addition to estimating the complex models with small samples, PLS does not assume the data should be normally distributed. Moreover, the use of PLS is also very appropriate when the conceptual and measurement models are either well undeveloped or it's still in the exploratory stage of the development of the theory (Ghozali, 2011). Similarly, according to Chin (1998), PLS is specifically useful in analyzing and modeling for a minimal measurement scale and small sample size. The program used is Visual PLS. Meanwhile, for the purposes of testing the differences perception the SPSS is used.

Testing hypotheses using PLS will be conducted in three phases. The first step is done to ensure the validity of the model. The criteria used is that any indicator has a factor loading greater than or equal to 0.50 (Chin, 1998) with a significance level of 0.05. Thus, the indicators with the factor loading of less than 0.50 were excluded from the analysis. The second stage, re-estimate the model after removing the indicators with the factor loading of less than 0.50 from the analysis. The third stage is to read the results of the outer model (measurement model) and analyze the inner model (structural model).

Because the indicators used in this study is entirely reflexive, the measurement model was evaluated by the convergent validity and discriminant validity of the indicators and the composite reliability for the block indicator (Ghozali, 2011). Further, to assess the discriminant validity it also used comparison of square root of average variance extracted (AVE) of each construct with the correlations between the constructs in the model. If the value of the square root of AVE of each construct was greater than the correlation between the constructs in the model, then the model has a good discriminant validity (Fornell and Larcker, 1981). Recommended value of AVE is greater than 0.50. The next is the reliability test, which measures the internal consistency of the indicators of a construct that indicates the degree to what extent each of the indicators indicates a common construct. Minimum reliability values of variables forming latent dimensions that can be received is equal to 0.70.

The second stage is to assess the Inner model (structural model) describing the relationship between latent variables was evaluated by looking at the percentage of variance explained by the value of R-square for the dependent latent constructs and the amount of structural path coefficients. Changes in the value of R square can be used to assess whether the effect of certain independent latent variables on the dependent latent variable does have a substantive effect or not (Ghozali, 2011). Furthermore hypothesis testing is done by taking into account the significant value of the estimated structural paths. Cut of Point used in this study, is the value of the Critical Ratio (CR) and to calculate the probability value (p-value). If the probability value of the Critical Ratio is less than 5% (t> 1.96), the hypothesis is accepted. If the probability of the Critical Ratio values are greater than 5% (t <1.96), the hypothesis is rejected (Hair et al., 1998).

4. RESULT AND DISCUSSION

From 395 companies as ERPS users, only 268 companies agreed to be surveyed. Data collection was carried out for four months, starting in October 2010 until February 2011. Up to the time limit, the rate of return via mail and e-mail has collected 12 copies, while visits directly collected 38 copies. It is still far from the expected. Therefore, the researchers extended the time of data collection until April 2011. The end result of the process of collecting data is as follows: 18 copies were collected via mail and e-mail and 53 copies from direct visits so that a total of 71 copies representing 71 companies, but only 63 of them can be processed.

4.1. Respondent Profile

The profile of the respondents can be seen in Table 1., ERPS users consist of various types of industries, but most were firms in the Miscellaneous Industry. Based on the position of the respondents in the company, the position of the department managers varies. Managers who are in the Non IT/Accounting field are 41% and 30% are in the IT, while in the accounting field 29%. This indicates that the ERPS users do not only exist in one department, but are also in different departments that have already been acquainted with the use of ERPS. Furthermore, most respondents have used ERPS vendors of SAP, as many as 43%. Based on the description of the respondents, it can be concluded that the sample is fairly representative of the kind of industry, the department's managers who have filled the questionnaires, and the type of vendors used.

Table 1. Respondent Profile

Industry Type	Total	Persentage	Vendor Name	Total	Persentage
Agriculture	3	5%	SAP	27	43%
Mining	4	6%	Oracle	7	11%
Basic Industry and Chemicals	7	11%	IFS	4	6%
Miscellaneous Industry (otomotive, wired,elektronic)	15	24%	In house	3	5%
Consumer Goods Industry	8	13%	Mincom	3	5%
Property, Real Estate and Building Construction	9	14%	Peoplesoft	2	3%
Infrastructure, Utilities & Transportation	8	13%	SUN SYSTEMS	2	3%
Trade, Service&Investment	9	14%	Others	15	30%
Total	63	100%	**Total**	63	100%
Department Manager	**Total**	**Persentage**			
Information Technology (IT)	19	30%			
Accounting	18	29%			
Non IT / Accounting	26	41%			
Total	63	100%			

4.2 Non-Response Bias Test

Non-response bias testing is done to detect the possibility of individual differences in the responses between individuals who have participated and who did not participate in this study. Testing is done by comparing the characteristics of the subjects who participated with a subject that is not willing to participate.

Because the data of the subjects who are not willing to participate can not be known, respondents who replied late are used as proxy respondents for those who are not willing to participate.

Table 2. *Non-Response* **Bias-Test**

Response	Deskriptive	Variable		
		ERPC	AISQ	EDM
Earlier (N=48)	Mean	8.354	32.938	28.229
	Deviation Standard	2.556	6.075	5.276
Later (N=15)	Mean	8.467	31.733	27.533
	Deviation Standard	2.800	4.399	2.722
	Probability	0.885	0.480	0.627

For the purpose of non-response bias testing, using SPSS 16.0, respondents are grouped into two groups, answering early and late. The group that answered earlier consisted of 48 respondents (October 2010 - February 2011) and the group who answered late were 15 respondents (March 2011 - April 2011).

Testing is done by t-test with SPSS 16.0, to compare the scores of respondents within each group on each of the study variables. If the significance of the average scores indicate p-value> 0.05, then the inferred average scores did not differ between the groups tested.

As presented in Table 2., the results of the non-response bias, using the t-test on a nonparametric test with SPSS 16.0, have shown a score of the p-value> 0.05.

Thus, it can be concluded that there was no significant difference between an early respond and a late respond. Therefore the data of this study can be used to explain the conclusions of the study.

4.3 Hypothesis Test

4.3.1 Measurement Model (Outer Model)

The first step in the analysis of the PLS is testing the measurement models that were evaluated using the convergent validity and discriminant validity for the block of indicators.

Convergent validity can be assessed by looking at each indicator's reliability, composite's reliability and the averaged Variance Extracted (AVE). Testing the validity and reliability of the data is done using Visual PLS 1.04bi program.

The number of indicators or item questions used in the questionnaire were as many as 14 questions. Based on testing results, the validity and the reliability of all items were declared as a valid and reliable questionnaire.

A detailed description is presented below.

4.3.1.1 Convergent Validity

By using the Visual PLS 1.04bi program, the data is processed and has produced a value loading, greater than 0.5 for all items except for the OSC indicator (for the ERPC construct) which is equal to 0.488. Therefore, all items, except the indicator OSC, can be used at a later stage. Total items to measure the level of the use of the ERPS as proposed in the questionnaire consist of three items.

The first question is "which modules are used"; is it the module for accounting/finance, operations (manufacturing), or human resources (FSC)?

The second question is "whether all parts are covered by the company's ERPS"; the department, division, the entire company, or several companies (OSC).

The third question is "which geographically regions are covered by the company's ERPS; one region (single site), some regions (multiple sites), national, or international (GSC).

Based on the output of Visual PLS 1.04bi, factor loading values for the first phase are presented in Table 3.

Table 3. *Convergent Validity*

Phase I			Phase II		
Construct	Indicator	Loading	*Construct*	Indicator	Loading
ERPC	OSC	0.488	*ERPC*	GSC	0.995
	GSC	0.963		FSC	0.623
	FSC	0.591	*AISQ*	FOR	0.803
AISQ	FOR	0.803		AKUR	0.811
	AKUR	0.811		TIME	0.927
	TIME	0.927		ISI	0.873
	ISI	0.873		EASE	0.738
	EASE	0.738		PEM	0.877
	PEM	0.876	EDM	EPK1	0.871
EDM	EPK1	0.87		EPK2	0.842
	EPK2	0.842		EPK3	0.91
	EPK3	0.91		EPK4	0.862
	EPK4	0.862		EPK5	0.801
	EPK5	0.801			

The Construct of AIS quality (AISQ) was measured with six items of the question," is the output displayed in a useful format?" (FOR), "an accurate accounting information system" (AKUR), " to obtain the information needed in a timely manner" (TIME) , "the content information needs" (ISI), "information systems are easy to use" (EASE), "overall, the system provides useful information for the ongoing monitoring of the decisions and actions" (PEM). Measuring the effectiveness of the decision-making is done by the five items questionnaire, "which improves the timeliness of access to corporate data" (EPK1), "providing a high level of integration of corporate data" (EPK2), "using the ERPS has made the company's AIS more accurate and easily accessible" (EPK3), "use of the ERPS has improved the quality of corporate financial reporting" (EPK4), "use of the ERPS has improved the decision-making process" (EPK5). After all indicators loading factor that had a value smaller than 0.5 were excluded from the analysis in the first phase, the next stage was to calculate back all valid indicators in the first phase. The results of the new loading factor values that are shown in Table 3, shows the value of all indicators loading factor are greater than 0.5.

Table 4. Crossloading

Scale Items	ERPC	AISQ	EDM	Interaks
GSC	**1.0115**	-0.1475	-0.0711	-0.1511
FSC	**0.6333**	-0.0472	-0.0089	-0.0215
FOR	-0.131	**0.8157**	0.6108	0.2673
AKUR	-0.2152	**0.8248**	0.6566	0.3982
TIME	-0.0495	**0.9417**	0.8376	0.5233
ISI	-0.136	**0.8868**	0.7323	0.5677
EASE	-0.1965	**0.7497**	0.599	0.2961
PEM	-0.0448	**0.8905**	0.852	0.5123
EPK1	-0.1129	0.7964	**0.8851**	0.5241
EPK2	0.0861	0.7196	**0.8558**	0.5202
EPK3	-0.1305	0.8403	**0.9251**	0.5575
EPK4	-0.0432	0.6792	**0.8764**	0.5166
EPK5	-0.0773	0.6409	**0.8136**	0.5215
INT	-0.1433	0.5219	0.6152	**1.0164**

The Next is the assessment of the discriminant validity. The first test of cross loading results (can be seen in Table 4.) shows that the entire value of the factor loading of each indicator is greater than the measurement of the other constructs. The conclusions from this analysis is that any latent constructs can predict the measurement of the blocks better than other blocks so that the measurement of the research model has a good discriminant validity. The second appraisal is done by looking at the comparison value square root of average variance extracted (AVE) of each construct with the correlations between the construct in the model. Visual PLS calculation results for the average variance extracted (AVE) is presented in Table 5.

Table 5. AVE and Square Root of AVE

Variable	Average variance extracted (*AVE*)	Composite Reliability	√Average variance extracted (*AVE*)
ERPC	0.689	0.808	0.830
AISQ	0.706	0.935	0.840
EDM	0.736	0.933	0.858

The Square root of AVE values to construct ERPC was 0.830, AISQ constructs 0.840, constructs EDM 0.858. Furthermore, a comparison between the values of the square root of AVE and correlations between the construct is presented in Table 6. On the whole it can be seen that the value of the square root of the AVE of each construct was greater than the correlation between the construct. Thus it can be said that the model has a good value for a discriminant validity (Fornell and Larcker, 1981).

Composite reliability is a block of indicators that measure a construct reflexive. Composite reliability with a value of more than 0.7 indicates a good internal consistency. Visual PLS output's results, as shown in Table 5., show the value of the entire construct composite reliability above 0.7. Thus, it can be concluded that all constructs have a good internal consistency. The entire measurement on the above measurement model shows the value that meets the assessment criteria. Thus, we can conclude that all indicators that have been revised can be used to test the hypotheses and has a high reliability.

Table 6. The Square Root of AVE and Correlations Between The Construct

	ERPC	AISQ	EDM
ERPC	**0.830**		
AISQ	-0.141	**0.840**	
EDM	-0.066	0.848	**0.858**

4.4 Structural Model (Inner Model)

After having tested the measurement model (outer model), further testing is the structural model. This test is intended to evaluate the relationship between the constructs that have been proposed in this research hypothesis. Using Visual PLS, produced two types of information about how well are the predicted structural model and the relationships that have been hypothesized. The first information obtained by looking at the value of R square, is a test of goodness-fit model to explain the variation in the percentage of the overall construct of the model. By using Visual PLS outputs and bootstrapping methods of 500 samples, as shown in Figure 1., the R-square values for the endogenous variables EDM 0764, show that two exogenous variables, namely the breadth of the use of ERPS (ERPC) and the Accounting Information Systems Quality (AISQ), as well as the interaction variables together explain 76.4% of the variation in the effectiveness of the decision making (EDM). This value indicates that the substantial explanatory power is greater than 67% according to Chin (1998).

The second Information obtained through the parameter coefficient and the significance of t-statistic values are used to test the hypothesis. Figure 1. also shows the path coefficients indicating the strength of the association between two constructs. However, not all path coefficients provide significant value (at p = 0.05). Path coefficient for the effect of the breadth of the use of ERPS (ERPC) to the effectiveness of Decision Making (EDM) is 0.071, t value of less than 1.96 (1.639), is not significant at p = 0.05. Path coefficient for the Accounting Information Systems Quality (AISQ) towards the effectiveness of Decision Making (EDM) is 0.737, the t value is greater than 1.96, (8.98), significant at p = 0.05. The path coefficient for the interaction variable of the Accounting Information Systems Quality (AISQ) to the effectiveness of Decision Making (EDM) is 0.237 with a t value greater than 1.96, (1.967), and significant at p = 0.05.

Thus, it can be concluded that the effectiveness of the decision making is influenced by the Accounting Information Systems Quality (AISQ) and the variable breadth. Using ERP Systems (ERPC) is a moderating variable in relation to the Accounting Information Systems Quality (AISQ) and the effectiveness of Decision Making (EDM). The more extensive use of the ERP systems will provide higher influence on the quality of the relationship with the effectiveness of the Accounting Information Systems Decision Making. This means that the quality of the accounting information system will affect the effectiveness of the decision-making in the manager's task.

Significant results suggest that the use of the ERPS, in particular, the functional scope and geographic scope has a moderating impact on the relationship between the accounting information system's quality and decision-making effectiveness. It shows that ERPS can integrate all the data so as to produce information that assists the company management in the decision making process. The quality of the accounting information systems, is especially indicated by the accuracy of the system and then in the sequence, through the ease of use of the system, continuous monitoring of the decisions and actions, timeliness of information, and the effectiveness of display formats.

The accuracy of accounting information system shows that the system used by the company can produce in accordance with the required information so that it can be used in the effective decision-making process. This means that the delivery of information has been interpreted and understood easily, achieve better dissemination of information related to parts or functions.The effectiveness of the decision making as described is obtained specifically by increasing the decision making process, and further by the availability of a high-level enterprise data integration, accuracy and ease in accessing to data on the company's accounting information system, the timeliness of access to corporate data, and enhancing the quality of the corporate financial reporting.
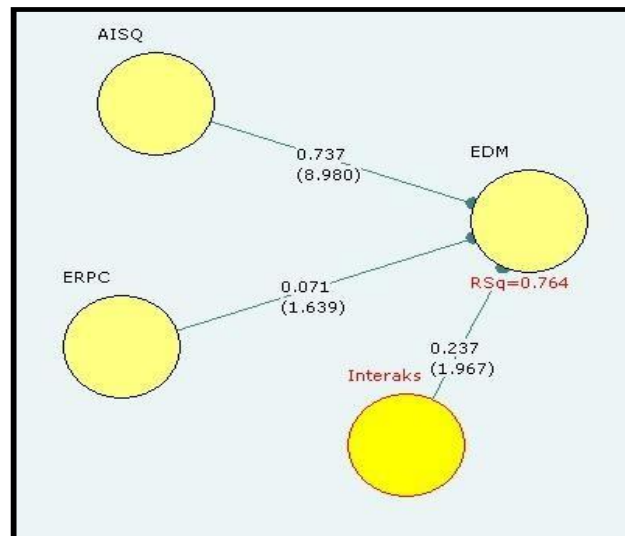

Figure 1. EDM Model

These results are consistent with the theory of Information Systems (IS) Success (DeLone and McLean, 1992), the successful implementation of the system in terms of the quality of the system used, the quality of information, use, and user satisfaction. Satisfaction using the system in terms of content, format, ease of use, timeliness, and accuracy of information.

Table 7. T-test Result

Manager Perceived	Deskriptive	Variable		
		ERPC	AISQ	EDM
Information Technology (N=19)	Median	32.08	35.29	36.45
Accounting (N=18)	Median	29.31	31.08	27.56
Others (N=26)	Median	33.81	30.23	31.83
	Chi_square	0.652	0.907	2.193
	Asymp. Sig.	0.722	0.636	0.334

The results of this study support previous studies, such as research by Nicolaou (2000) and Yeunyong (2007). Both of these studies showed the effect of the use of the integrated system and the perception of the effectiveness of the accounting information systems. Moreover, it also supports research through surveys by Spathis and Constantinides (2004), Spathis (2006), as well as Spathis and Ananiadis (2005). They found that the use of Enterprise Resource Planning systems has brought changes, especially in the accounting process, and the ERPS has integrated all accounting applications.

The results of this study also support the research of Spathis and Constantinides (2003) and Sajady et al. (2008), namely that the use of The ERPS is useful in enhancing the flexibility to produce information, improve the quality of corporate financial reporting, effective decisions making, and maintaining the data more easily. In particular, Sajadi et al. (2008) concluded that the use of information technology can affect the effectiveness of the accounting information systems. Significant results on the effectiveness of the decision-making models also support the study of Bahrami and Jordan (2009) about an improvement in the decision-making process both at a strategic and operational level.

The results of the test with SPSS 16.0 as presented in Table 7. showed no difference in the perception of the quality of the accounting information systems and the effectiveness of the decision-making between the different functional managers. This is consistent with the results of Chang (2006), Ifinedo and Nahar (2007), Esteves (2009).

4. CONCLUSIONS

This research was conducted with three objectives: (1) assess whether the manager perception of the accounting information systems quality affects the effectiveness of the decision making process, (2) assess whether the breadth of the use of ERPS can be a moderating factor in the relationship between manager's perception of the accounting information systems quality and the effectiveness of the decision-making process, (3) assess whether there are differences in perception between managers of different departments about the accounting information systems quality and the effectiveness of the decision-making process in the breadth of the use of ERPS.

Based on the above objective hypothesis testing has been performed and obtained the following results;

- The manager's perceptions of the accounting information system's quality affect the effectiveness of the decision making process.

- The breadth of the use of the ERPS can be a moderating factor in the relationship between manager's perception of the accounting information system quality and the effectiveness of the decision-making process.

- There was no difference between the perceptions of the different department managers regarding the accounting information systems quality and the effectiveness of the decision making process on the breadth of the use of the ERPS.

- As the results of testing the outer model, the breadth of the use of the ERPS, can be measured with the capability concept proposed by Karimi et al. (2007) The level of usage can be seen from the wide range of systems using either functional or geographic systems. Therefore, the concept of information system capabilities can be used in future studies related to information systems.

- Measurement of the accounting information system's quality in this study followed the theory of Information Systems (IS) Success. The effectiveness of the accounting information system can be assessed by user satisfaction in processing task, storing, and disseminating information that can be used for decision making. Therefore the theory of Information Systems (IS) Success can be used in the literature related to accounting information systems especially in data processing and the utilization of information due to the information system implementation.

- This study has not used the random sampling data because there is no information indicating the number and names of companies that have officially used the ERPS. To overcome the difficulties experienced in the data collection with the company as unit of analysis, further research can be performed with the user ERPS as the unit of analysis. This is done to get an breadth idea of the benefits from the end user to the intended use of the system.

- This study has used a survey method, so that more in-depth information about the perceptions of the respondents have not been not obtained. For future research it is necessary to use other methods to explore a more detailed picture of the overall benefits from the level of the use of the ERPS.

- Future research will also need to accommodate the differences in the time of assessment of the effectiveness of the implementation of decisions reached due to the implementation of ERPS. In addition, information about the benefits of accounting have also been associated with the firm's performance improvement.

REFERENCES

[1]. Alzoubi A. (2011). The Effectiveness of the Accounting Information System Under the Enterprise Resource Planning (ERP): Study on Al Hassan Qualified Industrial Zone's (QIZ) Companies. *Research Journal of Finance and Accounting*. Vol 2 No.11.

[2]. Bahrami B., Jordan E. (2009). Impacts of Enterprise Resource Planning Implementation on Decision Making Processes In Australian Organisations. *Pacific Asia Conference on Information Systems (PACIS) 2009 Proceedings*.

[3]. Brazel J.F. & Dang L. Oktober (2005). "The Effect of *Enterprise Resource Planning (ERP)* System Implementations on The Usefulness of Accounting Information". *SSRN-id815190*.

[4]. Carton F., Adam F. (2005). "Understanding the Impact of Enterprise System on management Decision making: An Agenda for Future Research". *The Electronic Journal of information Systems Evaluation.* Vol 8 lss 2 pp. 99-106.

[5]. Chang, H.H. (2006). "Technical and management perceptions of enterprise information system importance, implementation and benefits", *Information systems Journal,* Vol 16, pp. 263-292.

[6]. Chin W.W. (1998). "Issues and opinion on Structural Equation Modeling". *MIS Quarterly; Mar 1998; 22, 1; pg. VII.*

[7]. Dehning B. & Richardson D.J. (2002). "Returns Of Investments In Information Technology: A Research Synthesis",

[8]. *Journal of Information Systems*, Vol. 16 (1):7--30.

[9]. DeLone W.H. & McLean E.R. (1992). "Information Systems Success: The Quest for the Dependent Variable".

[10]. *Information Systems Research*, 3(1):60--90.

[11]. Doll W.J. & Torkzadeh G. June. (1988). "The Measurement of End-user Computing Satisfaction*". MIS Quarterly,* pp. 259 – 274.

[12]. Esteves, L. (2009). "A benefits realization road-map framework for ERP usage in small and medium-sized enterprises".

[13]. *Journal of EnterpriseInformation Management,* Vol. 22 No. 1/2, pp/ 25-35.

[14]. Fornell, C. & Larcker, D. (1981). "Evaluating Structural Equation Models with Unobservable Variable and Measurement Error". *Journal of Marketing Research, 18. 39-50.*

[15]. Ghozali I. (2011). "*Struktural Equation Modeling: Metode Alternatif dengan Partial Least Square (PLS)*". Edisi 3, Semarang: Badan Penerbit Universitas Diponegoro.

[16]. Grabski, SV., Leech, SA., & Schmidt, PJ. (2011). "A Review of ERP Research: A Future Agenda for Accounting Information Systems". *Journal of Information Systems vol. 25, No. 1. Spring 2011. Pp. 37-78.*

[17]. Granlund, M. (2011). "Extending AIS research to management accounting and control issues: A research note".

[18]. *International Journal of Accounting Information Systems 12. pp3-19.*

[19]. Gupta, A. (2000), "Enterprise Resources Planning: The Emerging Organizational Value System", *Industrial Management and Data System Journal Vol.100 No.3, pp.114-118.*

[20]. Hair J.F., Anderson R.E., Tatham R.L., & Black W.C. (1998). "*Multivariate Analysis*" (5th Edition). McGraw Hill.

[21]. Holsapple, C.W., Wang, Y.M., & Wu, J.H. (2006). "Empirically testing user characteristics and fitness fators in enterpise resource planning success". *International Journal of Human Computer Interaction,* Vol 19 No. 3, pp. 323342.

[22]. Hunton J.E., Lippincott B., & Reck J.L. (2003). "Enterprise Resource Planning Systems: Comparing Firm

[23]. Performance of Adopters and Nonadopters*". International Journal of Accounting Information Systems*, Vol. 4: 165– 184.

[24]. Ifinedo, P., & Nahar, N. (2007). "ERP systems success: an empirical analysis of how two organizational stakeholder groups prioritize and evaluate relevant measures". *Enterprises Informaion Systems,* Vol. 1No. 1, pp. 25-48.

[25]. Kanellou, A. & Spathis, C. (2011). "Accounting Benefits and Satisfaction in an ERP Environment". *8th International Conference on Enterprise Systems, Accounting and Logistics 11-12 July 2011, Thassos Island, Greece, pp. 360-376.*

[26]. Karimi J., Somers T.M., & Bhattacherjee A. (2007). "The Impact of *Enterprise Resource Planning (ERP)* Implementation on Business Process Outcomes: A Factor-Based Study". *Journal of Management Information Systems*,Vol. 24 (1):101–134.

[27]. Kim K. (1988). "Organizational Coordination and Performance in Hospital Accounting Information Systems: An Empirical Investigation." *The Accounting Review*, Vol. 6: 85--99.

[28]. Longinidis, P. & Gotzamani, K. (2009). "ERP user satisfaction issues: insights from a Greek industrial giant". *Industrial Management and Data Systems,* Vol. 109 No. 5, pp. 628-645.

[29]. Moon Y. (2007). "Enterprise Resource Planning (ERP): a review of the literature". *Int. J. Management and*

Enterprise Development, Vol 4, No. 3.

[30]. Nicolaou A.I. (2000). "A Contingency Model of Perceived Effectiveness in Accounting Information Systems: Organizational Coordination and Control Effects". *International Journal of Accounting Information Systems*, Vol. 1: 91-

[31]. -105.

[32]. Poston R. & Grabski S. (2001). "Financial impacts of Enterprise Resource Planning Implementations". *International Journal of Accounting Information Systems*, 2:271–294.

[33]. Sajady H., Dastgir M., & Nejad H.H. (2008). "Evaluation of The Effectiveness of Accounting Information Systems".

[34]. *International Journal of Information Science and Technology,* Vol. 6 (2).

[35]. Schlichter, BR., & Kraemmergaard, P. (2010). "A comprehensive literature review of the ERP research field over a decade". *Journal of Enterprise Information Management. Vol 23(4): 486-520.*

[36]. Shehab, E.M., Sharp, M.W., Supramaniam, L. & Spedding, T.A. (2004). "Enterprise Resource Planning An Integrative Review" *Businees Process Management Journal, Vol. 10 (4): 359-386.*

[37]. Spathis C. (2006). "Enterprise Systems Implementation and Accounting Benefits". *Journal of Enterprise Information Management* Vol. 19 (1): 67--82.

[38]. Spathis C. & Ananiadis J. (2005). "Assessing The Benefits of Using An Enterprise System in Accounting Information and Management". *Journal of Enterprise Information Management,* 18(2):195--210.

[39]. Spathis C. & Constantinides S. (2003). "The Usefulness of ERP for Effective Management". *Industrial Management & Data Systems* 103 (9):677--685.

[40]. Spathis C. & Constantinides S. (2004). "Enterprise Resource Planning Systems' Impact on Accounting Processes".

[41]. *Business Process Management Journal*, Vol. 10 (2):234--47.

[42]. Sutton G. (2006). "Enterprise Systems and The Re-Shaping of Accounting Systems: A Call for Research". *International Journal of Accounting Information Systems*, 7:1–6.

[43]. Ugboma E. (2004). "Assuring Information Systems' Effectiveness through Data Integrity: Essential Guidelines for Information Systems Databases". *Proceeding ISECON 2004*, v21.

[44]. Yeunyong W. (2007). "Causes And Consequences Of AIS Effectiveness In Manufacturing Firms: Evidence From Thailand", *International Journal of Business Research*.