Accounting Research Journal of Sutaatmadja (ACCRUALS)
Volume 4 Nomor 01 Tahun 2020 (Hal :9-17)
DOI : 10.35310/accruals.v4i01.376
https://ojs.stiesa.ac.id/index.php/accruals/index
ISSN 2614-5286 (Print) ISSN 2615-0409 (Online)

ENTERPRISE RESOURCE PLANNING AND INTERNAL CONTROL EFFECTIVENESS: A STUDY OF FOOD & BEVERAGE COMPANIES

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INFO ARTIKEL

Histori Artikel :
Tgl. Masuk : 31-01-2020
Tgl. Diterima : 12-03-2020
Tersedia Online : 20-04-2020

Keywords:
Enterprise Resource Planning, Internal Control Effectiveness, Food and Beverage

ABSTRAK/*ABSTRACT*

This study aims to examine and analyze enterprise resource planning on internal control effectiveness in food and beverage companies. Enterprise Resource Planning (ERP) discussed in this study is the implementation of the ERP software in the company studied. In this study, internal control effectiveness is measured using Morris (2011) model and the model of Catalya and Hadiprajitno (2014).

The population used in this research is food and beverage companies listed in Indonesia Stock Exchange (BEI). The technique of sample selection used purposive sampling. Based on these criteria, obtained samples as much as 14 companies during the observation period 2016-2017. In this sample there are 4 companies that are excluded from the study sample, because they have IPO after 2017. So, the final number of samples that can be observed as many as 28 samples. The analytical tool used in this study is the logistic regression.

These results shows that the predictive ability of the regression model to project companies applying SPE by 100%. This study however states that enterprise resource planning implementation has no effect on internal control effectiveness in food and beverage companies. Nevertheless, the ERP implementation need to be socialized due to small number of companies implementing this software.

INTRODUCTION

With the development of technology, it is not impossible to get complete and accurate data. To be able to collect accurate and accurate information, companies need a system to collect and manage data (Kadir, A. 2013:13). One of the technologies used by companies today is ERP (Enterprise Resource Planning). ERP is an information system that is used as a foundation in achieving company goals (Aburub, 2014).

There is also the function of ERP is to significantly increase business value such as: (1) Quality and Efficiency; (2) Reducing Expenses/Costs; (3) Assist in making decisions; and (4) Improve Company Performance. Accounting information systems such as ERP can provide information related to accounting, accounting processes, and financial matters. Information that can be provided is quotation, sales order, register payment, purchase order, pickings, payroll, etc (Voets, 2016). Many companies have used ERP systems to help manage their companies, although not all have been able to run well. The ERP system implementation can help improve accounting system flow control systems,

compliance with business regulations and simplify audit testing control activities.

Control activities are the policies and procedures used to ensure that the identified organizational risks are correct. The ERP used need computerized internal controls (Hall, 2001:158-163). Computerized Internal Control specifically deals with the information technology environment and information technology control, which is grouped, namely general control and application control. General control relates to the whole entity, such as control of data centers, organizational databases, system development, and program maintenance. Application control ensures the integrity of specific systems such as processing sals orders, accounts payable, and salary applications.

Internal control is an integral part of the accounting information system which is a process carried out by the board of commissioners, management and other personnel in the company (Herawati, 2014). Internal control needs to consider the costs and benefits, human resources, clarity of criteria to measure effectiveness, and the development of information technology that is carried out comprehensively.

The effectiveness of internal control is an important element in managing a company, because it can help in increasing company compliance with applicable rules and regulations. So that management can provide the company's financial statements correctly, completely, on time, and prepared efficiently and effectively.

To meet the internal control report requirement, a company must first document the controls that are in place and then verify that they are not subject to error or manipulation. An integrated information system provides the tools to implement internal controls, as long as the system is configured and managed correctly. An ERP system relies on a central database with accurate information. ERP systems make it difficult to hide fraudulent dealings. But it is unlikely that an ERP system or the Sarbanes-Oxley Act can prevent all fraud.

This raises research questions about how much influence the ERP system implementation has on increasing the effectiveness of internal control. Thus, this study aims to examine the truth of whether the implementation of the ERP system does have an influence on the effectiveness of internal control in companies in Indonesia which is proxied by internal control weaknesses.

THEORITICAL FRAMEWORK AND HYPOTHESIS

External users in a company environment are the group that is in the most uncertain conditions. This imbalance in mastery of information, in agency theory, will trigger a condition called information asymmetry (Richardson, 1998 in Priantinah, 2008). Haris (2004) in Priantinah (2008) states that company managers, as managers, certainly know more about internal information and company prospects in the future than shareholders. Therefore, managers should always give signals about the condition of the company to the owner. Signals that can be given by managers are through the disclosure of accounting information such as financial statements. However, the information received did not match the actual conditions (Denies Priantinah, 2008).

There are many companies in Indonesia, which even though they are already operating in the capital market, consider that good corporate governance is only a mere accessory and not as a fundamental requirement to achieve success in running the wheels of business.

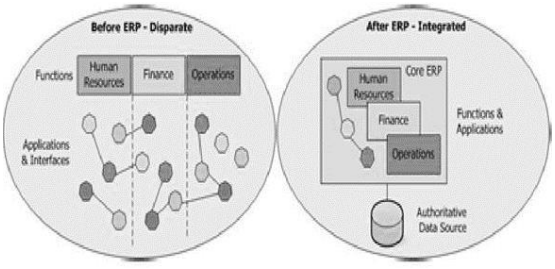
ERP Implementation On Internal Control Effectiveness

The practice of implementing internal control basically cannot be separated from the elements where one of the elements is the system of authority and recording procedure that provides adequate protection against wealth, debt, income, and costs. Therefore, a system that regulates the distribution of authority must

be made to provide the automation of the implementation of each transaction within the organization (Indra Bastian and Gatot Soepriyanto, 2008).

ERP systems as "packages information systems that integrate information and information-based processes within and outside the functional area of an organization". The intended integration concept is combining various needs of one software in one logical database making it easier for all departments to share information and communicate. One of the roles of ERP is to produce real-time information. So, the concept of ERP can be said as an attempt to control all company resources through complete and integrated data handling. ERP software as part of an information system that helps management produce the information needed for the survival of the company has an important contribution in achieving the goal of controlling an effective internal control system that is accounting control for reliable financial reporting.

Companies can get other benefits from ERP implementation. After ERP implementation, the company has an intangible positive impact on reputation, decision quality, productivity, and product quality (Kuo, 2014). ERP implementation does not directly improve financial performance but can improve company capability which will further affect the company's financial performance (Kurniawati et al., 2015).



Grafic 1 – Before & After ERP
Source: FIT Labs Telkom University

The effectiveness of internal control can be reflected in the findings of internal control weaknesses in the audit report. If a company implementing ERP is called an ERP implementor company, and a company that has not implemented ERP is called an ERP non-implementor company, then a hypothesis is formulated as follows.

Ho : The company's implementation of ERP has no internal control weakness compared to non-implementing companies

Although it has many advantages by implementing ERP, it does not rule out the possibility of a Ho situation caused by many factors and limitations. As the previous research conducted by Kristianti C. E and Achjari D. (2017) who failed to show that there is an increase incompany's profitability after the implementation.

Ha : The company's implementation of ERP has internal control weakness compared to non-implementing companies

There are many previous Research on enterprise resource planning such as (Morris, 2011), Kim, Nicolaou and Vasarhelyi (2013), Catalya and Hadiprajitno (2014), Puspandoyo T. (2015), Rahmawati R. and Zulkarnaini (2018), proven that with SOX provisions, companies that implement ERP systems have increased their internal control. This research results.

RESEARCH METHODS

The variable internal control weakness as the dependent variable in this study, follows the research of Doyle et al. (2006) and Morris (2011), measured using a dummy variable consisting of giving a score of 1 for the occurrence of internal control weaknesses of 1 factor or more and a score of 0 for the absence of internal control weaknesses. The presence or absence of internal control weaknesses found by external auditors can be used as a measure of the internal control weaknesses used in this study.

The independent variable in this study is the ERP implementation variable (ERP).

ERP implementation is obtained from the publication of state-owned enterprise information technology policies in the explanation of annual reports and other sources of information. This variable is measured using a dummy variable consisting of giving a score of 1 for companies ERP implementor and 0 for cocmpanies non-implementor ERP.

This study considers other factors that also influence the effectiveness of internal control. Based on literature and previous studies (Ge and McVay, 2005; Doyle et al., 2006; Ashbaugh-Skaife, 2007), factors such as resource constraints, operational risk, and company age can influence the effectiveness of internal control significant. These factors are known to pollute the results of this study if not included in the research model because of the magnitude of the impact of these factors on the effectiveness of internal control. In connection with the research objectives, analysis of the effect of ERP system improvement on internal control remains a major focus. Therefore, factors outside the ERP implementation will be controlled factors in the study.

The resource constraint control variable in this study follows the research of Doyle et al. (2006) proxied into the level of financial soundness of the company and the size of the company. The level of financial soundness is measured by looking at the presence or absence of aggregate losses or operating losses that occurred before the addition of the results of extraordinary transactions (Doyle et al., 2006). The company size variable uses the market value / book equity of the company (Ge and McVay, 2005). Thus, there are two variables to measure how much the resource constraints faced by the company in this study are:

1. Operating loss variable (LOSS)
   This variable is measured by a dummy variable. i.e. if there is a loss before the addition of the extraordinary transaction results will be given a score of 1 and if it does not occur will be given a score of 0.
2. Natural log variable of company value (LOGMKTV)
   For companies that go public, the value of the company is calculated from the market price per share multiplied by the number of shares of the company in circulation. Whereas for companies that do not go public, the company value is obtained from the book value of share capital (ordinary shares and preferred shares) recorded in its financial statements.

Analysis of financial statements can provide a risk analysis of company performance in the future which can reflect the ineffectiveness of the internal control system that is run. The ratio used to analyze the company's operational performance is the financial ratio in the aspect of operations. This study uses two control variables related to operating ratios sales growth) and the variable total inventory of total assets (inventory to total assets). The sales growth control variable (SALEGRW) is calculated by using the difference between the total income of the current period and the total income of the previous period divided by total income previous period. The total inventory to total assets (INVTAT) control variable is calculated by comparing the amount of inventory the company has against the total amount of its assets.

The age control variable of the company (LOGAGE) is determined based on the period of time the company listed since it was officially established. This study uses a natural log of the company's age as used in previous studies by Doyle et al (2007) and Morris (2011).

The population in this study are all food and beverage companies found on the Indonesian stock exchange. Samples are part of the population. Samples were collected as many as 14 food & beverage companies. Sampling uses a purposive sampling method with the following criteria:

1. Is a food & beverage company that is on the Indonesian stock exchange.
2. Has complete financial reports and annual reports available for 2016 and 2017.
3. The financial statements are examined by external auditors in the 2016 and 2017 financial periods and there are data on the results of their audits.

Based on the established considerations and criteria, the following sample sizes can be obtained:

Food and Beverage Manufacturing Companies Listed on the Indonesia Stock Exchange in 2016 & 2017

No.	Code	Company Name
1	AISA	Tiga Pilar Sejahtera Food Tbk, PT
2	ALTO	Tri Banyan Tirta Tbk, PT
3	CEKA	Wilmar Cahaya Indonesia Tbk, PT
4	DLTA	Delta Djakarta Tbk, PT
5	ICBP	Indofood CBP Sukses Makmur Tbk, PT
6	INDF	Indofood Sukses Makmur Tbk, PT
7	MLBI	Multi Bintang Indonesia Tbk, PT
8	MYOR	Mayora Indah Tbk, PT
9	PSDN	Prashida Aneka Niaga Tbk, PT
10	ROTI	Nippon Indosari Corporindo Tbk, PT
11	SKBM	Sekar Bumi Tbk, PT
12	SKLT	Sekar Laut Tbk, PT
13	STTP	Siantar Top Tbk, PT
14	ULTJ	Ultrajaya Milk Industry and Trading Company Tbk, PT

Source : www.idx.co.id

This study adopted a previous study by Morris (2011) that used logistic regression analysis techniques. Morris's research (2011) uses the weaknesses of internal control as the dependent variable and ERP system implementation as the main independent variable. The study also included control variables based on previous research by Ashbaugh-Skaife et al. (2007). This method is done using the SPSS application.

RESULTS AND DISCUSSION

The result of the study is presented in the following manner, which includes descriptive statistics, frequency table of hedging, and regression logistic used in the study.

The table below shows that the descriptive statistics of the variables studied which include ERP, Loss, Size, Sales Growth, Inventory, and Total Assets.

Table 1 – Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
SPE	28	.00	1.00	.0714	.26227
ERP	28	.00	1.00	.3571	.48795
Loss	28	.00	1.00	.1429	.35635
Size	28	-10.69	21.06	5.2513	6.74481
Sales Growth	28	-.25	.50	.0814	.12840
Inventory	28	.01	.39	.1568	.08925
Total Asset	28	2.94	4.48	3.6066	.43714
Valid N (listwise)	28				

Source: Data processed, 2020

The Descriptive Statistics shows that the SPE has a minimum value of 0.00, a maximum value of 1.00, an average value of 0.0714, and a standard deviation of 0.26227. The minimum value of Enterprise Resource Planning (ERP) is 0.00, the maximum value is 1.00, an average value is 0.3571, and the standard deviation is 0.48795. The minimum value of Loss is 0.00, the maximum value is 1.00, the average value is 0.1429, and the standard deviation is 0.35635. The lowest value of Size is -10.69, the highest value is 21.06, an average value is 5.2513, and the standard deviation is 6.74481. The lowest value of Sales Growth is -0.25, the highest is 0.50, an average value is 0.0814, and the standard deviation is 0.12840. The lowest value of Inventory is 0.01, the highest value is 0.39, an average value is 0.1568, and the standard deviation is 0.08925. The lowest value of Total Assets is 2.94, the highest value is 4.48, an average value is 3.6066, and the standard deviation is 0.43714.

Table 2 – Frequency Table

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	26	92.9	92.9	92.9
	1.00	2	7.1	7.1	100.0
	Total	28	100.0	100.0	

Source: Data processed, 2020

In the data used, samples that do activities will be coded 1 and the other code 0. Table 2 shows there are 2 observations of which 7.1% do the activities while those who do not do are 26 observations which amount to 92.9% of total observations which is 28.

Table 3 – Hosmer and Lemeshow Test

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	7	1.000

Source: Data processed, 2020

The Hosmer and Lemeshow Test shows the feasibility of a regression model. A sig value greater than 0.05 indicates data by the model. The results of the model feasibility test are shown in Table 3. The value of the Hosmer and Lemeshow Test was 0.000 with a significant probability of 1.000. Significance value is greater than 5%, meaning the model in this study can be accepted.

Table 4 – Classification Table

Classification Table[a]

Observed			Predicted		
			SPE		Percentage Correct
			0	1	
Step 1	SPE	0	26	0	100.0
		1	0	2	100.0
	Overall Percentage				100.0

a. The cut value is .500

Source: Data processed, 2020

The data in Table 4 shows the predictive ability of the regression model to project companies applying SPE by 100%. These results indicate that by applying the regression model, 2 observations are estimated to do SPE from all 2 observations that carry out hedging. The projection strength of the regression model in predicting the probability of the company not hedging is 100%. The model shows that there are no observations predicted not to hedge from a total of 26 observations. Overall classification accuracy in this model is 100 percent, which means the results of this study are very good because it is 100 percent.

Table 5 – Variables in the Equation

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	X1	32.927	1.739E4	.000	1	.998	1.994E14	.000	.
	X2	-25.687	2.400E4	.000	1	.999	.000	.000	.
	X3	-8.871	1.771E3	.000	1	.996	.000	.000	.
	X4	-154.438	1.152E5	.000	1	.999	.000	.000	.
	X5	-11.615	2.027E5	.000	1	1.000	.000	.000	.
	X6	64.823	2.095E4	.000	1	.998	1.420E28	.000	.
	Constant	-227.507	5.948E4	.000	1	.997	.000		

a. Variable(s) entered on step 1: X1, X2, X3, X4, X5, X6.

Source: Data processed, 2020

Variables in the Equation show the estimated value of the parameters to form a logistic regression model. The regression model formed from the estimated values of the Variables in The Equation parameter is shown in Table 5. The test results with logistic regression at an error rate of 5 percent. The model formed based on the estimated value of the parameters in Table 5 can be stated as follows:

$$Log\ \frac{p}{1-p} = -\ 227.507 + 32.927\ X1 - 25.687\ X2 - 8.871\ X3 - 154.438\ X4 - 11.615\ X5 + 64.823\ X6$$

Based on the formed regression model the results can be explained as follows:

The Ho hypothesis states that the company's implementation of ERP has

internal control weakness compared to non-implementing companies. The ERP variables show a regression coefficient of 32.927 that shows that the increase ERP implementation also increase the internal control effectiveness. However, the result is not significant and differ from Catalya and Hadiprajitno (2014) research results.

CONCLUSION

This reasearch tested the effect of ERP implementation on internal control effectiveness. The descriptive statistics indicated that from the food and beverage company analize there are four companies that implemented ERP system.

These results also shows that the predictive ability of the regression model to project companies applying SPE by 100%. This study however states that enterprise resource planning implementation has no effect on internal control effectiveness in food and beverage companies. Nevertheless, the ERP implementation need to be socialized due to small number of companies implementing this software.

Moreover, the control variables in the model LOGAGE (X), LOGMKTV (x), INVTAT (x) are also not significant at significant level 0.05.

In previous research, researchers found weaknesses in internal control from several companies (Catalya and Hadiprajitno, 2014).

IMPLICATION AND LIMITATION

Theoritically ERP is a concept of a system in attempt to control the company resources integrated data and help management in their planning in order to increase the performance of the companies. ERP system however is only implemented in four companies at food and beverage sub-sector. This research is limited to the number of data sample. Therefore, for future researchers they may broaden the scope to others sectors or even cover the companies in ASEAN region.

This study has several limitations so it must be careful in making generalizations and interpretations. First, the number of research samples is limited because not all companies implement ERP. Second, it has the possibility that the company discloses it with more specific name or the name of a particular software that actually belongs to the ERP category. Third, this research does not differentiate companies based on the classification of ERP systems implemented by each company. ERP that is implemented can vary. Fourth, this research does not pay attention to the industry effect and size effect to distinguish the companies.

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