

THE IMPACT OF INTERNAL CONTROL EFFECTIVENESS TO THE QUALITY OF MANAGEMENT ACCOUNTING INFORMATION SYSTEM : THE SURVEY ON *STATE-OWNED ENTERPRISES (SOEs)*

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ABSTRACT

This study aims to examine the influence of internal control effectiveness to the quality of management accounting information system (MAIS). The quality of management accounting information system should consider the basic nature of the information that is suitable to a particular organization. The methods used for the transmission are data and information. To run well, a MAIS needs the effective internal controls. This study was conducted in the State Owned Enterprises (SOEs), the hypothesis testing used the Structural Equation Model (SEM) approach with Partial Least Square (PLS) analysis tool. The study research found that the internal controls effectiveness significantly influenced the quality of MAIS. The study also found the results of applications control, especially in controlling the process of becoming the most powerful dimension in shaping the internal control in state-owned enterprises (SOEs). In the quality of MAIS, MAIS flexibility dimension becomes the strongest part that shaped and MAIS flexibility will facilitate the work completion.

Keywords: *Internal Control Effectiveness, Information Systems Management, the Quality of Management Accounting Information Systems and Integration*

1. INTRODUCTION

The quality of management accounting information system should consider the basic nature of the information that is suitable to a particular organization. The methods used for the transmission are data and information, culture and shared values that exist within organization [8]. All methods, organizational policies and procedures that ensure the safety of company assets, the accuracy and reliability of management data and other management operations standards, it is known as internal control [38].

The basic concept of internal control is quoted on *Committee of Sponsoring Organizations of the Treadway Commission (COSO)* which says that internal control is a process, influenced by the board of directors of an entity, management and other personel, which is designed to provide reasonable assurance of achieving the organization objectives, such as effectiveness and efficiency of operations, reliability of financial reporting and compliance with laws and regulations [26]. Internal

control describe policies, plans, and procedures which are adopted by the management of an organization to protect its assets [4], as opposed to the takeover, use, or disposition of assets illegally and including the controls relating to financial reporting and operations objectives [24]. Thus, an effective internal control is the most appropriate way to reduce the chances of ethics violations or criminal [12]. Internal control is also needed to ensure that the accounting information system (both financial accounting information system and management accounting information system) work as it should so that the risk of deviation from the intended objectives will be able to be avoided [38].

The research results of Danescu *et al* (2012) proved that in order to ensure the function of a *MAIS*, it is determined by the existence of adequate internal control, whether it is at the level of business entities as well as at the level of each activity, operation or process that is done, as well as the benefits receipt of information that can be truly felt in accordance with the economic realities



presented. While in supporting the general objectives of internal controls which were set by COSO related to financial reporting, Abbas & Iqbal (2012) discovered the importance of internal control systems in helping organizations to reduce operational risk and to improve the reliability of financial reporting to build the shareholders' trust. Meanwhile Doyle *et al* (2007) found that the companies with internal control of weak financial reporting, they generally have lower report quality. Thus, the implementation of effective security and control, organizations can improve the quality and reliability of information systems [21].

This study is expected to contribute to the influence of internal control effectiveness to the quality of MAIS. This study is also expected to generate precise measurements of internal control to produce the quality of MAIS, which is the measurement used is general controls and application controls.

2. THE LITERATURE STUDY

2.1. Internal Control Effectiveness

Control is a mechanism that is applied to protect company from risks and to minimize the impact of the risks on the company if the risks occur [23]. This is confirmed by Susanto (2008:117) states that control covers all methods, organizational policies and procedures that ensure the safety of company assets, accuracy and reliability of data management and operating standards of other management, which the controls are then known as internal control. Internal control describes policies, plans, and procedures which are adopted by the management of an organization to protect its assets (Bagranoff *et al*, 2008:349).

Internal control according to *Committee of Sponsoring Organizations of the Treadway Commission (COSO)* [26] is as follows:

Internal control is a process, affected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories: effectiveness and efficiency of operations, reliability of financial reporting and compliance with applicable laws and regulations.

If it is seen from the controlled object, internal controls are related to the control of information systems. The control of information system is a method and device that attempts to ensure the accuracy, validity and propriety of MAIS activity.

The control of information systems should be developed to ensure data entry, processing techniques, storage methods, and appropriate information output, so that it can monitor and maintain the quality and safety of the activities of input, process, output, and storage of any information system [32]. The control of information system is concerned with the control of transaction process, namely the procedures which are designed to ensure that the elements of the organization internal control process implemented in the specific applications system that is contained in any organization transaction cycle [5]. Implementing adequate controls over computer-based accounting information systems and facilities which are used to handle, record, process, store, and distribute the information has become a necessity [2].

Internal controls effectiveness which is associated with the quality of MAIS as an entity is the control of information system by using methods, policies and procedures that are implemented in an organization to minimize the risk that will occur, and to ensure the security of the company assets, accuracy and appropriateness of the information which is presented by company information system, so that it can support the achievement of company goals and objectives.

In the manual or automatic/computer-based control of information system [21], they can be categorized into two groups, they are **general control** and **application control** [5] [40][25][21].

General control is associated with all activities which involve the company accounting information systems and the company resources (assets) [40]. General control also governs the design, safety, and use of computer program and file security in general throughout the organization's information technology infrastructure [21]. General control applies to many functions of information system to help ensuring adequate control procedures for all applications [25].

Application control is specific control that is unique to each computerized applications, including automated procedures and manual procedures that ensure that authorized data is absolutely accurate and it is processed by the application [21]. This is in line with the statement of Sawyer *et al* (2006:155), application control is the control that provides assurance that a particular application will be processed in accordance with the specification of management and that such processing is accurate, timely, authorized, and complete. Accordingly, application control is designed to control accounting applications to

ensure completeness and accuracy of transaction processing, authorization accuracy and validity [31]. Including in application control, it can be divided into three (3) parts, namely input control [26] [34] [21] [5] [40].

In this study, it uses the dimensions of general control and application control that the indicators are as follows:

Table 1 : Internal Control Dimensions

<i>General Control</i> [5][40][21]	
1.	<i>Organizational controls.</i>
2.	<i>Asset accountability controls.</i>
3.	<i>Documentation controls.</i>
4.	<i>Data security controls.</i>
<i>Application Control</i>	
1.	<i>Input controls.</i>
2.	<i>Process controls.</i>
3.	<i>Output controls</i>

2.2. The Quality of Management Accounting Information System (MAIS)

Accounting information system of an organization has two major subsystems, financial accounting information system (FAIS) and management accounting information system (MAIS), wherein both accounting sub systems are differentiated on the objectives, the input nature and the process type that are used to transform inputs into outputs [14] [38]. The FAIS produces the information which is used by company external, using economic events as input and it is processed in accordance with the rules and certain rules [14]. While MAIS is an integral part of an organizational structure and to process regulation, motivate, provide performance measurement, such as delegation of authority, to communicate goals, participation and information feedback [18].

Management accounting information system (MAIS) is the same as information system in general which is able to support and serve the purpose of company strategy [19a]. Thus, an information system should serve at least one goal, but it can also serve several purposes at once. To serve the purpose is its fundamental justification, when the system stops to serve the purpose, it must be replaced [13]. The purpose of SIAM is providing information for operational activities [40] [13]; for planning, control, evaluation and continuous improvement [14]; and for decision-making [40] [13]. Thus, MAIS has a broad scope so that it is enable the managers to obtain information in the decision-making of successful economic in the long term [17]. To generate the information which is

suitable to the needs of users, it is required the quality of *MAIS*.

The concept of the quality of *MAIS* in this study is a specification that can be used as a framework that which is integrated into the company by utilizing the resources for providing relevant information to managers and employees in an organization, both financial information and non-financial information, for decision-making in reaching goal specifically within organization. When the system can meet the user needs, the quality of *MAIS* can provide satisfaction to the user system himself [30].

According to Laudon & Laudon (2012:530) generally information system in business entities pays attention to five (5) measurement variables, namely: *scope, time, cost, quality, and risk*. Meanwhile in terms of quality of information systems, Stair & Reynolds (2010:57) describes generally the characteristics of the quality of the information system they are *Flexible, Efficient, Accessible, and Timely*. Kaplan & Atkinson (1998:1) says that to test *MAIS*, whether it is motivated and helps managers or not in achieving organizational goals it can be seen from the *timely, efficient, and effective* of the system.

Researchers who measure the quality of system information are Ong *et al* (2009) and Wixom & Todd (2005) use the dimensions of *Reliability, Flexibility, Integration, Accessibility, Timeliness*. Chang *et al* (2012) uses the dimensions of *Security, Ease of use and Efficiency*. Specifically Heidmann *et al* (2008) measures the quality of *MAIS* using the dimensions of *Integration, Flexibility, Accessibility, Formalization and Media richness*.

From the information system measurement disclosed, the quality of *MAIS* measurement in this study uses *integration, flexible, reliability, efficient*.

Table 2: The Quality of Management Accounting Information System Dimension

<i>Integration</i>	
1.	Set of components and formal procedures related to one another, such as software, hardware and networks.
2.	Simplification of business processes, so that companies become more competitive.
3.	Master Data Management centralized improves the accuracy of data and management information.
<i>Flexible</i>	
1.	Useful for all people who will need it as a result of business development.
2.	System has input options.
3.	System has output options.

Reliability
1. System is available for users to use.
2. System provides reliable information for decision making.
Efficient
1. Number of inputs produce varying outputs.
2. Fast system response time.
3. Efficient data storage (files are not too big, so they do not spend a lot of memory).
4. Efficient data backup.
5. To determine the amount of time needed to complete the job.

3. RESEARCH METHODS

The method used is explanatory survey method, which describes causal relationships and correlations between variables by testing the hypothesis [22]. The survey was conducted to gather facts through questions to the people who are intended to help answer research hypothesis as a source of information about the Internal Control and Quality of *MAIS*. The research hypothesis is the effectiveness of controlling influence on the quality of management accounting information system (*MAIS*).

Hypothesis test used *structural equation model (SEM)* analysis based on *Partial Least Square (PLS)*. To determine the level of significance, it used $\alpha = 5\%$. Furthermore it was taken a decision, whether there is acceptance or rejection of the hypothesis by comparing t count value which is obtained from the results of statistical test with t critical value or t standard that has been set. The hypothesis of this study is the Internal Control Effectiveness influences on the Quality of Management Accounting Information System.

2.3. Theoretical Frame Work : Internal Control Effectiveness and The Quality of Management Accounting Information System

COSO internal control framework emphasizes the importance of keeping information and support systems that fit the company needs as a whole [26]. Further him [26] says that the *COSO* internal control also emphasizes the importance in integrating information system automatically with other operations. Thus, the internal control structure proposed by *COSO*, especially in the control environment is the control of information system [25].

Information system control is concerned with transaction process control, namely the procedure which is designed to ensure that the elements of the organization internal control process is implemented in the specific applications system which is contained in any organization transaction cycle [5]. Information system control should be developed to ensure data entry, processing techniques, storage methods, and information output appropriately, so that it can monitor and maintain the quality and safety of the activities of input, process, output, and storage of information system [32].

Other studies related to the concept of internal control as proposed by Mohanad & Audeh (2013), where the research result found that there is a significant influence of the communication risk between internal control and computer department on the efficiency of accounting information systems at commercial banks. Korvin *et al* (2004) developed a model for risk assessment of internal controls that helps managers make proactive decisions about introducing effective internal control measures, thus ensuring the integration and security of management accounting information system.

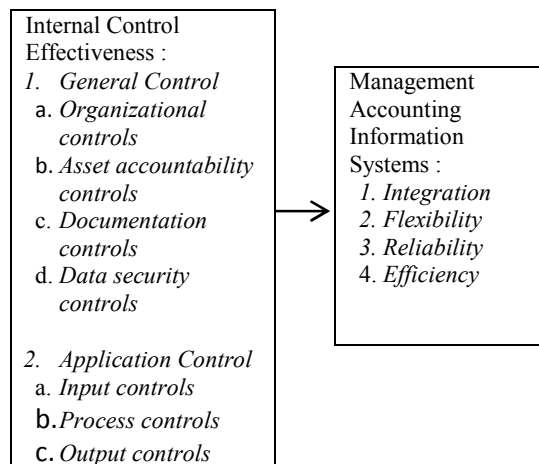


Figure: Research Model

The target of the study population was 83 *SOEs* with a sample of 56 *SOEs*. The number of respondents who participated is 236 operational managers. Selection of the target respondents are the operational managers, as operational managers run the daily tasks using information system and they are necessary to make decisions related to their daily tasks.

4. RESULTS AND DISCUSSION

4.1 Result

This study tested the hypothesis using *structural equation model (SEM)* with *PLS (partial least square)* approach. The loading factor value of each indicator and dimension used in the study showed that all the indicators and dimensions are capable in reflecting the effectiveness of internal control in *SOEs* and the quality of *MAIS* in *SOEs*. The study results also showed that the coefficient value at the influence of the internal control effectiveness to the quality of *MAIS* is R^2 0.638 or 63.8%. It means that the internal control effectiveness has influence value of 63.8% and the difference shows that there are other variables that contribute to influence the quality of *MAIS* in *SOEs*. The internal control effectiveness significantly influences on the quality of *MAIS* in *SOEs*, it is shown on the t count value. T count value of 9.188 is still above the critical value that has been set at 1.96. Thus, the hypothesis which is constructed in this study can be accepted.

From the statistical test results can be explained that the validity of indicators and dimensions which are used to construct research models are already qualified. Where model testing is done using *second order*, it is the first order tests loading factor of the indicators to the dimension of the research and the second order tests factor loading dimensions of the study variables. The loading factor test used SmartPLS 2.0 software.

Internal Control Effectiveness. Based on the results of the first order from the *confirmatory factor analysis* it can be seen the loading factor value of each factor is greater than 0.50. This means that all valid factors as a gauge for each dimension. Then the *composite reliability (CR)* of each dimension is greater than 0.70 which indicates that the indicators have consistency in measuring each dimension. Likewise, the *average variance extracted (AVE)* value of each dimension is greater than 0.50 indicates that on average it is more than 50% of the information which is attached to each indicator can be reflected through its dimensions.

Based on the second order results of the *confirmatory factor analysis*, *loading factor* of each dimension is greater than 0.50. This means that all dimensions are valid in shaping the organizational culture variables. The *composite reliability (CR)* value is 0.864 and greater than 0.70 which indicates that the five dimensions have consistency in measuring organizational culture. Furthermore, *average variance extracted (AVE)* value shows that

on average the information contained in each dimension can be reflected through internal control variables. These results show that Application Control dimension is the most important factor in reflecting internal control effectiveness variable in *SOEs*. This condition proves that the effectiveness of information system control is concerned with transaction process control, namely the procedures which are designed to ensure that the elements of the organization internal control process are implemented in the special applications system that is contained in each organization transaction cycle [5].

The Quality of Management Accounting Information System. Based on the the first order results of *confirmatory factor analysis* it can be seen the value of each loading factor indicator is greater than 0.50. This means that all indicators are valid as the measure gauge for each dimension. The *composite reliability (CR)* value of each dimension is greater than 0.70 which indicates that the indicators have consistency in measuring each dimension. Furthermore, the *average variance extracted (AVE)* value of each dimension is greater than 0.50 indicates that on average more than 50% of the information contained in each indicator can be reflected through its dimensions.

Based on the *loading factor* test it can be interpreted that the indicator of "the business processes simplification" becomes the most powerful indicator in reflecting integration dimensions, while the indicator of "centralized management data master" becomes the weakest indicator in reflecting integration dimension. For the indicators that reflect Flexible dimension, the indicator of "system has input selection" becomes the most powerful indicator in reflecting Flexible dimension, while the indicator of "useful for everyone who would need it" has the smallest *loading factor* which means that this indicator is the weakest indicator in reflecting Flexible dimension.

The most powerful indicator which reflects Reliability dimension is the dimension of "system is available for users to use", while the indicator of "system provides reliable information for decision-making" becomes the weakest indicator reflects Reliability dimension. On the Efficient dimension, the indicator of "fast system response time" has the greatest *loading factor*, which means that this indicator is the most powerful indicator in reflecting the Efficient dimension, whereas the indicator of "specifies the amount of time needed to complete the work" becomes the weakest indicator in reflecting the Efficient dimension.



4.2. Discussion

Control is a mechanism which is implemented to protect company from risks and to minimize the risk impact on company if the risk occurs [23]. The control which is meant here is information system control, the methods and devices which attempt to ensure the accuracy, validity and appropriateness of the information system activities [32], in this case of the *MAIS*. So control is needed to ensure that *MAIS* works as it should so that the risks to the deviation from the intended purpose can be avoided [38].

The study results prove that internal controls effectiveness significantly influences the quality of *MAIS* in *SOEs*. Thus, the study results support the hypothesis that has been built. The value influence of internal control effectiveness to the quality of *MAIS* has a great influence. The study results are consistent with the research results of Danescu *et al* (2012) which states that in order to ensure the function of an information system, is determined by the existence of adequate internal control, whether it is at the level of business entities as well as at the level of each activity, operation or process undertaken and in the benefits receipt of information in order to be perceived correctly in accordance with the economic realities presented. The study results are also consistent with the *COSO* internal control framework that emphasizes the importance of keeping information and support systems that fit the needs of company as a whole [26].

Although the respondents value which indicates that in *SOEs* it is in the category of "good" and when it is seen from the respondents value by *SOEs* sector also shows the category of "good", even for financial services and insurance sector it is in the category of "very good". However, internal controls effectiveness is expected to remain unfavorable, because it is still found the lack or it is not optimal at each *SOEs* to conduct their assets inventory, it can be seen from the respondent values who say that the attention of respondent is still not good in conducting assets inventory which is registered in the system physically. This condition is contradictory to internal control concept which is proposed by Bagranoff *et al* and Messier *et al*, that Bagranoff *et al* (2008:349) says that internal control describes the policies, plans and procedures that is adopted by management to protect its assets. Meissier *et al* (2008:192) also said that internal control is a safeguard to the asset by opposing the takeover, use, or disposition of assets illegally and includes the control which is related to financial

reporting and operations objectives. Thus, in the case happened in *SOEs* in Indonesia may lead to misuse of the asset as it is feared by Meissier *et al*. In *SOEs*, assets examination is done when there is an independent examiner or certain parts, while the parties or sections that use company assets are not active in paying attention to it.

From the respondents' value showed that *SOEs* sector that takes into account the inventory assets are in category of "good". These conditions are in the sector of trade, and financial services and insurance sector, while the other sectors are still in the category of "less good", even close to the category of "bad". This problem can be seen from the business risk level undertaken and the use level of the company's inventory which is higher, so that it needs special attention to determine the amount of appropriate inventory to be used as a support. For example, in a retail company, cabinet or display case as the merchandise publisher should really be known in order to maintain the service. While the most contradictory to the concept of internal control is on the Transportation and Warehousing sector, where we know visibly to do the business activities this company uses the company's inventory, but what happens is this sector which has control to inventory is in the category of "less good".

Besides lack of good the company's assets maintenance by parts that use it, maintaining data security is still in the category of "less good". It is proved from the respondent's answer, which are still few of respondents do *passwords* replacement to access the computer. Data is also the company's assets which are very valuable, but part of the respondents feel it was not so necessary, because information systems accessing can be used together, it is for the Financial Services and insurance sector only the password replacement is a necessity, because it concerns the business risks undertaken to keep the most liquid customers assets, money.

Another disadvantage gained from this study is that *SOEs* internal control is not effective in improving *MAIS* integration and the *MAIS* efficiency value of *SOEs* is still low, especially in agriculture, forestry and fisheries sectors. While the concept of *COSO* internal control emphasizes the importance of integrating information system automatically with other operations. It means that internal controls had not been effective as an ideal internal control functions.

Internal control deficiencies in *SOEs* in this study have shown the results of tests carried out by The Audit Board of The Republic of

Indonesia/BPK (2013), in which the BPK did the examination with a specific purpose on 21 inspection objects in SOEs and found 510 cases which consist of 234 cases of internal control systems weakness and 276 cases of non-compliance to statutory provisions.

Information system control is more concerned to transaction process control, the procedures which are designed to ensure that the elements of organization internal control process is implemented in specific applications system that is contained in any organization transaction cycle [5]. Information systems control should be developed to ensure data entry, processing techniques, storage methods, and information output appropriately, so that it can monitor and maintain the quality and safety of the activities of input, process, output, and storage of information systems [32]. Thus, one of the dimensions which is used in this study is application control.

The study results showed that application controls in SOEs is in the category of "very good" except in agriculture, forestry and fisheries sectors which have "good" category. So the general control in SOEs impacts on application control, this is in accordance with the statement of Moeller (2005: 96) that the general control applies to many information systems functions to help ensuring adequate control procedures for all applications. General control will also have an impact on the effectiveness of application control and transaction processing functions [31]. These results have proved that application control is the most powerful dimension in shaping internal control in influencing the quality of management information systems. As we know that MAIS is a specification that can be used as a framework that is integrated into company by utilizing the resources for providing relevant information to managers and employees in an organization, both financial information and non-financial information, for decision-making in achieving objectives specifically in organization. That is all the activities that run on company/organization run MAIS concept.

4. CONCLUSION

The study result found that internal controls have significant influence on the quality of MAIS. The study also found the application control results especially in the process control becomes the most powerful dimension in shaping the internal control in BUMN. In the quality of MAIS, the flexibility of a MAIS became an important part in shaping the

quality of MAIS. MAIS which is flexible will facilitate the work completion.

"Simplification of business processes" becomes the most powerful indicator in reflecting the integration MAIS dimension. For Flexible dimension, the indicator of "system has input choice" becomes the most powerful in reflecting MAIS Flexibility dimension in SOEs. "System is available for user to use" becomes the most powerful indicator in reflecting MAIS Reliability and for the Efficiency dimension, the indicator of "fast system response time" is the most powerful indicator in reflecting MAIS Efficiency in SOEs.

There are still many other factors that can influence the quality of MAIS, thus, it is suggested for researchers who want to develop the quality of MAIS concept to examine other factors such as the involvement of information system user [30], organizational culture [29] and the competence of information system user [28].

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