

**THE MEDIATION EFFECT OF MANAGEMENT ACCOUNTING INFORMATION SYSTEM
ON THE RELATIONSHIP BETWEEN KNOWLEDGE OF ACCOUNTING FUNCTION,
PERCEPTION OF ENVIRONMENTAL UNCERTAINTY AND MANAGERIAL
PERFORMANCE**

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ABSTRACT

Previous studies on the relationship between knowledge of accounting and managerial performance found equivocal results. Similarly, previous studies on the relationship between perceived environmental uncertainty, and managerial performance are still found contradictions. Therefore, it might be necessary to explore a variable that can better explain the relationships between knowledge of the accounting function and perception of environmental uncertainty on managerial performance. This study investigated the mediation effect of management accounting information system on the relationship between knowledge of accounting function, perception environmental uncertainty, and managerial performance. A survey was conducted on 244 managers of manufacturing industries listed in Indonesia Stock Exchange. Data is analyzed using Structural Equation Modeling. The results revealed that management accounting information system mediates the relationship between knowledge of accounting function, and perception of environmental uncertainty on managerial performance.

Keywords: 1. knowledge of accounting function, 2. perception of environmental uncertainty, and 3. Managerial performance

Introduction

Peacock (1985) stated that management who has lack of accounting knowledge, accounted for many small business failures. Holmes (1986), and Holmes & Nicholls (1988, 1989) found that the management who has limited knowledge of accounting, causing many small companies use the services of an accountant in the provision of accounting information. This suggests that the knowledge of accounting function can influence managerial performance if available management accounting information systems are adequate. The need for accounting information system will be increased when the company faced a high level of environmental uncertainty (Tushman & Nadler, 1987)

The continuous changes in the organizational environment are a constant problem that must be addressed by top managers (Milliken, 1990). Bourgeois (1985) and McCabe (1990) found that

the fit between the characteristics of the real and perceived environmental uncertainty affects the performance. Decision-makers, whose better interpret the real environment and translate them into useful information for decision-making yield better results (Phua, 2004). Phua statement shows that management accounting information system (MAIS) is required to translate the uncertainty of the environment that can be used to make the right decisions to produce a better performance.

This study aimed to determine the mediation impact of MAIS on the relationship between knowledge of accounting functions, perception of environmental uncertainty and managerial performance. This study uses the approach of organizational behavior described by Endler & Magnuson (1976), in Nelson and Quick (2006), they said that to understand human behavior must know something about the individual and something about the situation. In this study, the behavior is conceptualized as choosing MAIS; individual differences are conceptualized as knowledge of the accounting function, and perception of environmental uncertainty.

Literature Review

Knowledge of accounting function

According to Zikmund (2003) knowledge is a mixture of information, experience and insight to prepare a framework that can be used as a consideration when assessing new information or evaluate the relevant circumstances. Some theories on how to acquire the knowledge to make a difference between declarative knowledge and procedural knowledge are important for performance (eg, Anderson 1982; and Winograd 1975). Declarative knowledge is knowledge of facts and concepts in a domain (Anderson 1982; Waller and Felix 1984), whereas procedural knowledge is knowledge of carrying out the work (Anderson 1987; Bonner and Penington 1991; Waller and Felix 1984).

Research in the field of accounting show evidences which declarative knowledge and procedural knowledge related to performance improvement. For example, Bonner et al. (1992) found that measures of declarative knowledge about corporate taxes, positively related to tax issues are identified, and the measurement of corporate tax knowledge, both declarative and procedural positively correlated with a measure of the combination of the issues identified both qualitative and quantitative. As with studies conducted in other areas found that both types of knowledge are a positive effect on performance (Anderson, 1982).

Previous studies that have been done only focus on identifying the specific knowledge required to perform certain tasks (Bouwman and Bradley, 1997). Similarly, this research will only look at the management's knowledge about the function of accounting, which is based on the previous description, is declarative knowledge.

This research was conducted to see the knowledge of managers regarding three alternative functions of accounting, namely: organizational functioning, social and political functions, and individual function as it has been used by Covalski and Dirsmith (1983, 1986). The use of three alternative functions is expected to better understand the dynamics of accounting.

Perceptions of Environmental Uncertainty

Perceptions of environmental uncertainty (PEU), according to Linacre (2006) are a quantification of the lack of information about the world around the company as perceived by decision makers. The above statement, as is said by Dill (1962), the use of uncertainty to determine the effect of environment on the organization is not the same as the use of uncertainty to describe the environment itself. As said by Downey (1974a) perception of uncertainty can be regarded as a property of individual psychology, rather than, considered as environmental attributes. So the uncertainty may be thought of as an attribute of the individual behavior, rather than, physical environmental attributes (Downey et al., 1975).

Gerloff, Muir and Bodenshtainer (1991) states that the uncertainty in the literature can be organized into two groups: a contingency view and the view of perception. The views of contingency related to reading and adapt the organization to the reality (Lawrence & Lorsch, 1967; Galbraith, 1973; Tusman and Nadler, 1978). The view of perception, uncertainty is a process-oriented environment seeking an overview of the stages that include messaging, interpretation or learning about the environment, in order to obtain the closest to the uncertainty of the environment.

Based on the review conducted by Milliken (1987) proposed three types of environmental uncertainty, namely: state uncertainty, effect uncertainty and response uncertainty. Management felt the state uncertainty (or perceived environment uncertainty) when they perceive the organization or a specific component environment is unpredictable. Effect uncertainty is defined as the inability to predict the impact of environmental conditions or changes in the organizational environment. Response uncertainty is defined as a lack of knowledge or response options and the inability to predict the likely consequences of the chosen response. Before Milliken, Duncan (1972) also states that the perception of environmental uncertainty can be conceptualized with three components.

Gerloff et al. (1991) said that the sub-scale Duncan and Milliken is the same with each other. This is in line said by Milliken (1987: 338) *Duncan's measure of perceived environmental uncertainty, for example, appears to measure all three of these types of uncertainty.*

Management Accounting Information System

Management accounting information system (MAIS) is a formal system, designed for the management to provide the necessary information for decision making and for evaluating managerial activity (Chenhall, 2003; Garrison, Noreen and Brewer, 2006, Hanson and Mowen, 2005). The system is considered as an economic good whose value must be greater than the costs. (Demski & Feltham, 1976).

MAIS is intended to establish and maintain records of the relevant events that can be used to measure the earnings and financial position, to assess performance in accordance with the goals and prepare for appropriate management incentives with performance. The system is also intended to prepare the data for managers to control costs, identify problems, determine

alternatives for solving the problem and select the solution that will be implemented. (Otley, 1980). Vancil, 1979 in Sweiringa & Moncur, 1987, argued to identify characteristics that are believed to show why MAIS is so powerful. First, the system has an inherent integrity that can not be questioned by the operations manager, because the accountant has a detailed set of rules, which guarantees that every transaction will be recorded in the same way. Management accounting information system provides a set of detailed rules, set by the organization itself. Second, MAIS is comprehensive and covers the entire organization. Accounting collects all the activities of the organization and express it in the form of finance that allows for comparison. The collection can be modified and broken down into a level or rank in accordance with the wishes of the manager. Third, every business organization should have a system of accounting. This system solidify the reality that the data should not be ignored. Fourth, the accounting system is set up a way that enables managers to gain new insights that can be brought into their business.

Chenhall and Morris (1986) seek to improve understanding of the characteristics of MAIS which are potentially useful for managers. They say that the information needed to make decisions can be expressed in a common characteristic. They propose that each item of information should have the following characteristics: broadscope, timeliness, the level of the integration, and the level of aggregation.

Managerial Performance

Performance measures used in traditional management is financial measure, because it is easy to use. Performance measures that are used today are balance scorecard approach, personal performance measured by financial measures to seeing the results of past actions taken, is also equipped with non-financial performance measures such as customer satisfaction, internal business cost effectiveness, and productivity, as well as personal commitment, that determine the future performance (Kaplan & Norton, 1995). Financial measure indicates a result of these actions outside of finance. Thus, if the manager wants to multiply the company's performance, attention should be focused on motivating employees, in order to improve the performance of non-financial or operational, through their skills in managing the company by implementing management functions.

Managerial performance is a factor that can increase the effectiveness of the organization. According to Mahoney et al. (1963), the meaning of managerial performance is the performances of the individual members of the organization in managerial activities include: planning, investigation, coordination, supervision, staffing, negotiations and representation. According to Russell (1994), managerial performance is defined as the systematic integration covering business, finance and monitoring employee performance evaluation within the framework explicitly related to the company's goals. Managerial performance is more abstract and complex than the performance of employees in general. Therefore, assessing the performance of the manager, should be done by the manager himself

The Relationship between Knowledge of accounting function and Managerial Performance

A person who has relevant knowledge to his task, it is seen that the performance will be better. Bonner and Lewis (1990) examined the relationship between knowledge and

performance. specifically, they estimate the level of variation in the performance of auditors in various audit tasks, can be explained by differences in knowledge

Peacock (1985) stated that the lack of management knowledge, about accounting, resulted in many small companies fail. Holmes (1986), and Holmes & Nicholls (1988, 1989) found that management's knowledge of accounting is limited, causing many small companies use the services of an accountant in providing accounting information.

The Relationship between Perception of Environment Uncertainty and Managerial Performance

External

Environment does offer great challenges and opportunities (Ebrahimi, 2000). In fact, corporate excellence, success and even survival of the company depend on the ability of the company to monitor and adapt to the environment (Lawrence & Lorsch, 1967; Duncan, 1972).

Changes in the external environment of the company led to changes in the operating conditions of the organization. As a consequence, companies need to adapt to the environment as they perceive it, because individuals respond according to their perceptions, in order to maintain stability performance (Stone & Tudor, 2005).

The Relationship between Knowledge of Accounting Function and Management Accounting Information System

The manager of a company in performing its functions needs information. Information on the company is accounting information. Therefore, managers who have knowledge of accounting functions will be able to choose better accounting information relevant to their needs. Motivation to study accounting knowledge will increase understanding of the manager or owner in applying accounting in business (Libby, 1993 and Spilker, 1995).

The Relationship between Perception of Environmental Uncertainty and Management Accounting Information System

Many researchers say that environmental uncertainty has a critical influence on how managers process and use management accounting information (Gordon and Narayanan, 1984; Gull, 1991; Mia, 1993; Gull and Chia, 1994; Fisher, 1996; Agbejule, 2005). several other researchers also said that the decision maker in an organization perceives the environment of great uncertainty or complexity of the organization, using information systems that allow to overcome the uncertainty (Gordon and Miller, 1976). Chenhall (2003) says that, increasingly uncertain external environment, managers increasingly need sophisticated management accounting information system to face the external environment.

The Relationship between Management Accounting Information System and Managerial Performance

Jensen and Meckling (1992) say that information is the key to maximizing performance, because the quality of decision-making is determined by the quality of information available to decision makers. The main goal of MAIS is to prepare the accounting information will be used to

facilitate decision making by managers. Previous studies (Chong, 1996, 1998; Mia, 1993; Mia and Chenhall, 1994) proved empirically that the role of MAIS to facilitate decision-making can improve managerial performance

The Mediation Effect of Management Accounting Information System on the Relationship between Knowledge of Accounting Function, Perception of environmental Uncertainty and Managerial Performance

According to Klein, et al. (1994) the management accounting information system of an organization is set up the same information for all managers can explain the variation in the performance of the individual, if there are only individual differences managers such as knowledge and perception. Research conducted by Benjamin (1989) found that knowledge management regarding accounting sophistication is still very limited, led to the availability of accounting information is limited, which in turn have an impact on performance. In addition to the above the company's managers formed her/his perception of the environment, and perception of environmental uncertainty related to behavior management in selecting the information and decision-making processes (Agbejule, 2005) which will eventually lead to performance.

Hyphotesis

Based on the discription of the construct of this study, and the nature of the relationship between variables, then the hyphotesis can formulated below:

- H1: knowledge of accounting function have significant effect on managerial performance
- H2: perception of environment uncertainty have significant effect on managerial performance
- H3: knowledge of accounting function have significant effect on management accounting information system;
- H4: perception of environment uncertainty have significant effect on management accounting information system
- H5: management accounting information system have significant effect on managerial performance
- H6: management accounting information system have significant effect on the relationship between konwledge of accounting function, perception of environmental uncertainty and managerial performance

Metodology

The data of this study is the primary data, obtained by distributing questionnaires to 453 managers (top, production and marketing) manufacturing industries are listed on the Indonesia Stock Exchange. The data can be processed as many as 204 questionnaires. This study uses explanatory in order to explain the relationship between variables.

Finding / discussion

The results of this study describes the perceptions of managers regarding knowledge of accounting functions, perception of environment uncertainty, management accounting information systems and managerial performance are as follows.

The table below illustrates that the perception of managers of the company's manufacturing industry is only slightly above the average score, it's indicating the managers perceive enough knowledge about the function of accounting, perception of environmental uncertainty, management accounting information systems and managerial performance

Table 1 Perception Managers about KAF, OC, MAIS and MP

No	Variable	Mean
1	Knowledge of accounting function	4.89
2	Perception of environment uncertainty	4,77
3	Management accounting information system	4.89
4	Managerial performance	5,59

Structural Equation Modeling (SEM) with LISREL 8.70 software used to test the hypothesis in this study. The model has a match of three points of view that is an absolute measure of fit, incremental fit measures and parsimonious fit measures. Thus the model fit to the data as a whole is good.

The measurement model is needed to describe the indicators to measure the accuracy of its latent variables. Validity and reliability analysis is used to test the suitability of the measurement model. The test results showed that the all dimensional of four variables are valid and reliable. (Factor loading greater than 0,90 and R² greater than 1,95). The results of hypothesis testing indicate that,

Table 2 The Influence of KAF and PEU on MAIS

Influence of exogen variable on endogen variable	Weight	t statistic	Description
Influence of KAF on MAIS	0.23	3.12	Significant
Influence of PEU on MAIS	0.16	2.20	Significant

The above table shows that the exogenous variables, knowledge of the accounting function can explain the variation of management accounting information system by 23%. While the exogenous variable, perception of environment uncertainty can explain the variation of management accounting information system by 16%.

Table 3 The Influence of KAF, PEU, and MAIS on MP

Influence of exogen variable on endogen variable	Weight	t statistic	Description
Influence of KAF on MP	0.14	2.39	Significant
Influence of PEU on MP	0.13	2.43	Significant
Influence of MAIS on MP	0.52	4.77	Significant

The above table shows that the exogenous variables have a significant impact on the endogenous variables of managerial performance. Knowledge of accounting functions could explain the variation in managerial performance by 14%. While the perception of environment

uncertainty variable, can explain the variation in managerial performance by 13%. MAIS has a significant influence on managerial performance. It can be seen from the t value by 4.77, which is bigger than t table 1.95, and MAIS can explain the variation in managerial performance by 52%.

In addition to the direct influence of individual differences on managerial performance, also can be seen the magnitude of indirect effects of individual differences on managerial performance by MAIS. The amount of indirect influence and the magnitude of the total effect shown in the following table:

Table 4 Direct, Indirect, and Total Effect of Exogenous Variable on Managerial Performance

Influence of exogen variable on endogen variable	Direct	Trought MAIS	Total
Influence of KAF on MP	0.14	0.12	0.26
Influence of PEU on MP	0.13	0.08	0.21

The magnitude of the total effect for knowledge of accounting function 0.26, and the magnitude of indirect effect 0.12 it shows that the magnitude of the mediation effects of management accounting information systems on the relationship between knowledge of accounting function and performance managerial $0.12 / 0.26 = 0.46$ according to Kenny (2012) mean MAIS mediate incomplete. While the relationship between perceptions of environmental uncertainty and managerial performance, management accounting information system also does not have a complete mediating $0.08 / 0.21 = 0.38$.

These findings suggest that even though theoretically, in order managers can make decisions properly, so the performance is good, necessary management accounting information systems, which produce information that is needed in decision-making. In fact, managers of manufacturing industries are less use of management accounting information. This is likely because most managers have no management background. The background, causing the manager has preference information other than accounting.

Conclusion

The above description shows that both variables knowledge of accounting function and perception of environmental uncertainty can explain managerial performance directly. Similarly management accounting information system is able to significantly explain the variation on managerial performance. The magnitude of any correlation coefficient indicates that the management accounting information systems are able to mediate distally the relationship between knowledge of accounting function, perceived environmental uncertainty and managerial performance. Based on these results it is necessary a manager understand the management accounting information system that is able to manage its business well, which in turn will result in better performance.

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