



How Quality of Management Accounting Information Systems is Influenced by Environmental Complexity?

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A quality management accounting information system will produce quality management accounting information. Environmental complexity can improve the quality of management accounting information systems. This study aims to measure how much influence environmental complexity has on the quality of management accounting information systems. This study uses a descriptive survey verification method, carried out through the analysis of company units owned by state-owned enterprises in Indonesia. For the purpose of data analysis using SEM-PLS the results of the study show that environmental complexity influences the quality of management accounting information systems.

Key words: *environmental complexity, quality, management accounting information systems, integration, flexibility, accessibility.*



Introduction

Accounting information has quality characteristics that make management accounting information valuable to decision makers (O'Brien & Marakas, 2010: 365). Quality management accounting information can be useful to assist management in making useful decisions (Gelinis et al., 2014: 22; Meiryani et al, 2017). However the management accounting information system used in institutions still has problems, for both business and non-business institutions. In government institutions as expressed by Usman Abdhali Watik (2011) the government has not been able to integrate all data and state wealth properly, further the government has not consolidated the data on assets and wealth owned by each ministry, such as state-owned buildings, official cars and investment assets.

Other issues related to management information systems occur at PT Angkasa Pura, data from the finance/accounting department, manufacturing department, sales and service section have not integrated one part with the other because of the weak system used (Tommy Soetomo, 2012; Imeokparia, 2013; Kenneth and Grazyina, 2013; Jaya and Verawaty, 2015; Alkali and Imam, 2016). Environmental uncertainty causes individuals/managers to be unable to recognize important opportunities and threats such that it will prevent managers from making decisions, for example if an organization knows little about what its consumers like or dislike, then the organization will have difficulty designing new products. Facts such as environmental uncertainty that occur in industrial companies becomes an obstacle in producing information that is useful for managers in determining cost of goods sold (Grđić, Gregorić, & Nižić, 2019).

Environmental changes are followed by changes in management accounting information systems as a form of response to changes in the environment so that managers can adjust to the environment (Weetman, 2006: 06; Meiryani, 2016; Muñoz, 2017). Based on the phenomena, literature used and the results of previous studies, this research will focus on the object of research, namely environmental uncertainty as a variable that influences the quality of management accounting information systems and their implications for the quality of management accounting information (Prochazka, 2017).

Literature Review

Bateman & Snell (2008: 76) reflect that there is not enough information about the surrounding environment to understand or predict the future. Environmental uncertainty arises from two related factors; (1) complexity and (2) the dynamic. Complexity is the number of problems that must be solved by a manager, while dynamic environment is the



level of change that occurs (Bateman & Snell, 2008: 76). According to Groot (2010) the dimensions of environmental uncertainty are grouped into: "customer/client buying behaviour, distributor behaviour, supplier behaviour, competitor strategy, product development and production in technology, changes in the company's production system, shareholder demand, government policies, social development".

Jusoh (2008) added, environmental uncertainty is measured by: "comprising customers, suppliers, competitors, labour unions and regulatory groups". Schulz, Wu & Chow (2010) measure environmental uncertainty with characteristics: "economic, technological and political". Paulraj & Chen (2007) uncertainty is the following measured through dimensions: "demand uncertainty, supply uncertainty and technology uncertainty". Marius & Loreta (2010) conclude that the management accounting information system is influenced by environmental uncertainty. According to Duncan (1997) environmental uncertainty focuses on the lack of information about environmental factors and how the environment itself will affect the success or failure of corporate objectives. Elbanna & Alhwarai's (2012) dimensions of environmental uncertainty include: "product uncertainty, competition uncertainty, economic uncertainty, government policy uncertainty and hostility".

Opinion Xue, Majid & Foo (2012) state that environmental uncertainty is measured in two dimensions, namely environmental uncertainty that has a direct impact (task environment) and environmental uncertainty that has an indirect impact (remote environment). Task environment consists of customers, resources (suppliers and investors) and competitors. Remote environment consists of political, economic, social cultural, technological, natural environment and legal / developments. Hoque (2013: 39) suggested the dimensions of environmental uncertainty include: "customers, government, deregulation and globalization, technology processes, competitors, government deregulation/politics, the economics environment and industrial relations". Wang & Quang (2013) detail the dimensions of environmental uncertainty as: "government policies, economy, resources and services used by the company, product markets and demand, and competitors" (Rzeszutek, Szyszka, & Czerwonka, 2015).

Elbanna & Alhwarai (2012) distinguish environmental uncertainty into two perspectives: 1) focus on politics, government policy and economic uncertainty, 2) focus on strategies that view industry as a relevant analysis consisting of: process technology, availability of raw materials, demand for finished products and competitors. Miles & Snow (2003: 195) use the following dimensions of environmental uncertainty: relationships with suppliers, competing company price/quality/design, customer demand, investor relations, relations with government regulatory agencies, relations with trade unions. Griffin (2010) Ali and Haseeb



(2019) measure environmental uncertainty as seen from both the external environment and internal environment. The external environment consists of: economic, socio-cultural, political legal, international, technological, competitor, customer, supplier, strategic partner, regulators. The internal environment consists of: owners, boards of direction, employees, physical environment and culture (Mtar & Ep 2017).

The following dimensions reflect conditions and events that have the potential to affect the organization in many ways, following an explanation of each dimension:

- 1) Economic dimension, is the overall health and vitality of the economic system in which the organization operates. Economic factors that are particularly important for business are growth, general economy, inflation, interest rates and unemployment rates.
- 2) Dimensions of technology are the methods available to convert resources into products or services.
- 3) Socio-cultural dimensions include the habits, customs, values and demographic characteristics of the community in which the organization functions.
- 4) The political-legal dimension is the government regulation regarding business and the general relationship between business and government.
- 5) The dimension of competitors includes other organizations competing for resources, the most obvious resource contested by competitors is consumer money. Organizations may also compete to get different types of resources in addition to consumer money, for example competency to get loans from banks.
- 6) Customer dimensions involve anyone who pays money to obtain an organization product or service, for example new marketing methods, new products & services, increasingly fussy customers, lower brand loyalty.
- 7) Supplier dimensions are organizations that provide resources to other organizations.
- 8) The dimensions of the rule maker involves elements of the task environment that have the potential to control, regulate or influence the policies and practices of an organization.

Theoretical Framework

Effect of Environmental Uncertainty on the Quality of Management Accounting Information Systems

The results of the study on manufacturing companies in Nigeria by Ajibolade, Arowomole & Ojikutu (2010) conclude that the influence of environmental uncertainty has a large impact on management information systems. Another study by Agbejule & Burrowes (2007) uses the dimensions of environmental uncertainty: "action of competitors, changes in marketing practices, products and services outdated, changes in tastes and preferences, changes in



technology", with respondents from manufacturing companies in North-Western Finland and a total of 78 organizations. The results of the study show that there is an influence of environmental uncertainty on the use of management accounting systems. One way organizations adapt to the environment is through information management, information management is important especially when the intent is to form an initial understanding of the environment and to monitor signs of the environmental change (Griffin, 2010). Changing environmental information conditions can be responded to by changing the management information system (Hoque, 2013: 2). Merchant & Vander (2012: 588) added: "uncertainty has some potential effects on management accounting systems, uncertainty a significant situational such as accounting.

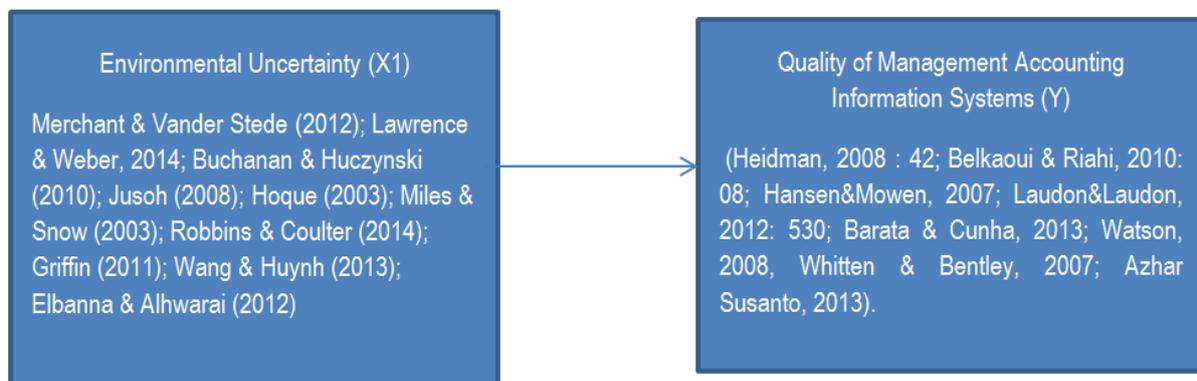
Bateman & Snell (2007: 79) added various options for responding to environmental changes by adapting to the environment, influencing the environment, choosing a new environment. Ahmed, Isa, Majid, Zin & Amin, 2017 and Heidman (2006: 42) that the management accounting system not only produces reports but also includes planning, budgeting, and forecasting processes needed to prepare and review management accounting information. This means that an increase in the ability of managers to predict changes in the environment will improve the quality of the management accounting system because with that ability managers are able to provide direction, integrate and translate innovation into performance (Heidman, 2006: 54; Meiryani & Lusianah, 2018). The same thing was conveyed by Azhar Susanto (2013: 26) through his statement: "both the internal environment and the external environment have a very strong influence on the system". Zimmerman (2011: 13) posed that management accounting systems were heavily influenced by external environment. Each organization must be able to assess their unique environment and then adapt according to the wisdom of the manager because effective managers are managers who can determine the ideal conditions between the environment and the organization, even maintaining harmony between the organization and the environment is the key to the manager's work (Griffin, 2002: 69).

This is supported by the results of research conducted by Han-Min & Linh (2013) which found that the relationship between environmental uncertainty and the accounting system was statistically significant (Zandi and Haseeb, 2019). Effective information management requires commitment from organizational resources to form, maintain and update information systems along with the emergence of new technologies. In an organization, for example, it may be necessary to make marketing systems and operating systems communicate with each other (Griffin, 2002: 240). Marius & Loreta (2010) explained that the quality of management accounting information systems is influenced by conditions of environmental uncertainty. The same claim was made by Coombs et al. (2010: 15): that management accounting

information systems can be developed with predictable environmental conditions. Environmental uncertainty has an influence on the quality of management accounting information systems (Haseeb, Iqbal-Hussain, Ślusarczyk, Jermisittiparsert, 2019; Weetman, 2008).

Based on the description above it can be concluded that environmental uncertainty affects the quality of management accounting information systems see Figure 1 below.

Figure 1. Theoretical Framework.



Research Methodology

This is a descriptive study, namely a study that aims to describe the characteristics of the study variables (Sekaran, 2013: 105). This research may explain the variable characteristics, environmental uncertainty and the quality of management accounting information systems (descriptive). The research methodology utilised in this research is a survey instrument which aims to give the idea of the phenomenon, explain the hypotheses, make predictions and get the meaning and implication of the problem/s to be solved. This type of research is cross-sectional and explanatory with the purpose to describe the state of the object under study. Therefore this research is done by collecting survey data only once. This research data is thus primary data which is obtained through the questionnaire instrument distributed to the respondents at the research site (Haseeb, Abidin, Hye & Hartani, 2018). The type of investigation is descriptive and verificative. The unit of analysis in this research is Indonesian state-owned enterprises. The population of this study amounts to one hundred and fifty (150) state owned enterprises. Sampling techniques in this research use simple random sampling techniques and withdraw the sample using the formula of thumb to produced 61 samples. Data testing is used by structural equation modelling (SEM) with data processing using



Partial Least Square (PLS) programs. The research and leader manager, head of finance division and head of accounting division complete surveys as part of the sample.

Findings and Discussion

Based on the test results it can be concluded that external environmental uncertainty affects the quality of management accounting information systems. The results of this study provide empirical evidence that the better the ability of managers to understand, predict, respond/accommodate and anticipate changes and complexity in the external environment, the greater the improvement in the quality of management accounting information systems. In other words, it can be interpreted that the quality of management accounting information systems can be improved if companies through their operational managers are able to understand, respond/accommodate and anticipate any changes and complexity of the external environment that occur as much as possible. The magnitude of the f^2 value of 0.514 indicates that the uncertainty of the external environment has a strong influence on the quality of the management accounting information system.

The strong influence of external environmental uncertainty on the quality of management accounting information systems can be explained based on the description of research results that when viewed from the results of the average response score of respondents based on dimensions, environmental changes are included in either category. This means that state-owned enterprises through their operational managers are able to understand, respond / accommodate and anticipate well the changes that occur in the external environment. It is evident that managers in insurance companies implemented the latest insurance system to provide maximum service to customers/insured, and also always follow the dynamics of economic change. Furthermore the dimensions of environmental complexity are also included in the positive category. This means that state-owned enterprises through their operational managers are able to understand and predict the complexity of competitors and consumers well, but still problems exist due to the complexity of consumers, as there is still a gap between the ideal score and the actual score (Jermsittiparsert, 2016). Operations managers in state-owned enterprises conduct certain treatments to improve services, but operational managers do not understand the advantages of products offered by similar companies in the financial services industry. At present there are still many insurance companies that do not have unit-link products to compete with competing products, and with unit-links, consumers receive insurance benefits and invest in one transaction.



Operational managers in state-owned enterprises have not been able to optimally predict the desires of consumers. In other words, insurance companies have not been able to produce products that are in accordance with the wishes of consumers/customers/insured very well to date. Based on the facts collated from consumer – it is understood that they want cheap insurance products with fast claim services. Low-cost insurance products can no longer be serviced for free, because they are bound by the rules of the Financial Services Authority. So currently what can be done by operational managers to understand the customer's wishes by issuing safe, profitable products and claims can be done quickly. Fast claims should be able to take advantage of the high development of information technology through various communication media, such as through the provision of websites that can easily be accessed by customers at any time and the use of electronic mail to deliver evidence of supporting claims from customers to state-owned enterprises.

To improve these conditions in a positive direction, the operational managers of state-owned enterprises must improve their ability to understand and predict consumer desires for insurance products produced so that changes in consumer desires can be adjusted to the management accounting information system used. Thus, the development and use of management accounting information systems cannot be separated from the influence of environmental uncertainty both internal and external (Jermisittiparsert, Trimek & Vivatthanaporn, 2015; Avison & Fitzgerald, 2006: 7). Likewise the opinion of Azhar Susanto (2013: 29) that both the internal and external environment has a very strong influence on the system is further validated. Through quick and efficient response, managers can monitor every change and complexity of the external environment to improve the quality of the management accounting information system.

The results of testing the hypothesis above support the results of Bhimani's (2003) study which shows that external environmental uncertainty factors affect the use of a quality management accounting information system. The uncertainty of the external environment will have an impact on the nature of the management accounting information system as a provider of information that is useful for management in decision making. The problem of the uncertainty of the external environment becomes an obstacle in improving the performance of national manufacturing companies, because the management accounting information system cannot present accurate information in decision making such as the decision to determine cost of goods sold. External environmental changes are always followed by changes in management accounting information systems as a form of response to changes in the environment so that managers can adjust to the new environment (Weetman, 2010: 6; Laudon & Laudon, 2014: 116). This is supported by the results of research



conducted by Gordon & Narayanan (1985) which shows that external environmental uncertainty influences the design of management accounting information systems.

Conclusion

Based on the phenomenon, the formulation of the problem, the hypothesis and the results of the study, the authors draw the following conclusions: external environmental uncertainty affects the Quality of Management Accounting Information Systems. The quality of the Management Accounting Information System is not yet high because there are still many operational managers who are less able to understand and predict the complexity of the external environment, especially the complexity of consumers.

Suggestion

Based on the results of the research and discussion and conclusions presented in this article, it is recommended that improvements to managers' understanding and ability in predicting competitor complexity, by way of "benchmarking" against insurance companies that exhibit best practice, create an understanding of the advantages of state-owned enterprise products offered by state-owned enterprises. To improve the understanding and ability of managers in predicting consumer complexity, customer surveys can be conducted through questionnaires distributed to the public. Further, in order to know the current community preferences for products of state-owned enterprises, there should be provision of suggestion and criticism boxes that can be sent via electronic media to gather as much information as possible about the weaknesses or advantages of the products of the state-owned enterprises. This would facilitate the adjustment of the external environment to the use of a quality management accounting information system.

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