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Integrated Management Accounting Information Systems for Competitive Adventage: The Case in State-Owned Enterprises of Indonesia

Ilham Hidayah Napitupulu and Anggiat Situngkir
Department of Accounting, in Politeknik, Negeri Medan, Medan Indonesia

Abstract: Management Accounting Information System (MAIS) which is integrated is the same as information system in general, it is able to support and serve the company goals to achieve a competitive advantage. The concept of integrated information system increasingly plays an important role in business entity as an integrated information system shows the success of organization information system. The research objective is to prove the concept of MAIS integration able to help company compete and prove the problems which are occurred on MAIS integration in achieving a competitive advantage. The research sample is State-Owned Enterprises (SOEs) in Indonesia. The descriptive analytical method which is used is to explain empirical evidence in this research. The research finds that MAIS is able to support the company objectives and can also be used as a tool that gives company competitive advantage. The research results also find that MAIS in SOEs is still not well integrated.

Key words: Management accounting information system, integration and competitive advantage

INTRODUCTION

Technically information system is a set of integrated components, which are interconnected to collect, process, store, and distribute information to support decision making and control in an organization (Laudon and Laudon, 2012). Information system also integrates sub-systems both physical and non physical which are interconnected (O'Brien and Marakas, 2010) and work together harmoniously to achieve a goal that is to process data into useful information. Integrated information system is built from diverse components, the software that is purchased or constructed specifically, hardware and networks (Bentley and Whitten, 2007).

The concept of integrated information system increasingly has important role in business entities (Nookabadi and Middle, 2006) as an integrated information system shows that the success of the organization information system (Whitten and Bentley, 2008). In hospital industry, integration becomes a success critical factor in supporting the work for cooperation among health care providers (Hasselbring, 2000) managing the administration, finance and patient care processes (Yucel *et al*., 2012). In venture capital industry, integration is to facilitate the management of partnership development (Davila and Foster, 2005). In manufacturing industry and food industry, the quality of system is generated from integration between subsystems (Nookabadi and Middle, 2006) it is conducted for logistics, production and all supply chain (Gimenez, 2006). Integrating supply chain process is a valuable capability which leads to the increasing of business value (Ghobakhloo *et al*., 2011).

The problems that arise during this time, information system that is not integrated can affect the effectiveness of work process and the more time it takes to process data, the slower decision making becomes and it would hamper the company growth in the future. In aviation transportation industry, as a result of a system that is still not good, the airline has not been able to collect quickly and easily and analyze passenger data, so it can not provide the best service to customers. Information system in SOEs also has the same problem that there are still some BUMN which have information systems that are not integrated, so it rises up the operational costs of some SOEs, logistics cost includes. In addition to profit-oriented industry institutions, at non-profit institutions such as government still has the same problems, it means that the concept of an integrated information system has not been achieved.

Accounting information system of an organization has two main sub-systems, they are financial accounting information system and Management Accounting Information System (MAIS) (Wilkinson *et al*., 1999;

Corresponding Author: Ilham Hidayah Napitupulu Department of Accounting, in Politeknik, Negeri Medan, Medan Indonesia

+Hansen and Mowen, 2007). Both subsystems are differentiated on the objectives, the input nature and the process type which are used to transform inputs into outputs. Financial accounting information system collects and processes transaction data and then disseminates financial information to stakeholders (Kieso *et al*., 2007), mainly external parties of company. MAIS produces information to help managers, executives and workers in decision-making for managing organization both short-term and long-term decisions (Mia and Patiar, 2002; Hamdan, 2012).

MAIS is the same as information system in general which is able to support and serve the purpose of company strategy. The managers use MAIS to seek more specific information about strategic issues from informal sources (Karlsson and Ahlstrom, 1996; Heidmann *et al*., 2008), it can also be used to provide companies competitive advantage (McLeod and Schell, 2007). Everything is easy to obtain when an entity has an integrated MAIS concept, both physical and non-physical that are harmoniously interconnected, so it can improve the business unit performance (Chapman and Kihn, 2009).

This research will examine the concept in integration of Management Accounting Information System (MAIS) and test the concept on stated-owned enterprises of Indonesia. State-owned enterprises will be grouped in six business sectors, in which each business sector will be seen which integration of Management Accounting Information System (MAIS) is used. This research will also prove the problems that happen in several industries in Indonesia. Descriptively it will be explained integration of management accounting information system at every sector of State Owned Enterprises (SOEs) from the questionnaire results which is distributed to respondents. The research will also look into the impact of MAIS integration on the other MAIS characteristic.

Literature review: Management Accounting Information System (MAIS). MAIS is an integral part of an organizational structure, as the regulatory process to motivate to provide performance measurement such as delegation of authority, to communicate goals, participation and feedback of information (Jones, 1985).

Firmly Belkaoui (2002) in his book entitled Behavioral Management Accounting defines MAIS as" the set of human and capital resources within an organization that is responsible for the production and dissemination of information deemed relevant for internal decision making". Thus, MAIS has a broad scope which allows managers to obtain required information in the decision-making of economic which is successful in long term (Hoque, 2002). Many researchers support the concept of integrated information system as it is proposed by Ong *et al*. (2009), Heidmann *et al*. (2008) and Wixom and Todd (2005). Thus it can be synthesized that the concept of MAIS is a specification that is used as a framework that is integrated into a company by utilizing the resources for providing relevant information to managers and employees in an organization both financial and non-financial information in decision-making to achieve specific goals in organization.

Integration: Specifically, integration is a set of components and formal procedures that are related to each other. Integration refers to the process of building a new system by combining software package, the old system that existed at this time and the new software (Dennis *et al*., 2009). The same as the statement of Whitten and Bentley (2008), it is said that the integrated system is to build an integrated information system of the various components in the form of purchased software, specially built software, hardware and network. Integrated information system relates to the success of the system which is used/developed, thus improving the performance of business unit (Chapman and Kihn, 2009) which integration emphasizes on capability of information systems to coordinate various segments in sub-unit (Sharma *et al*., 2006). In practice the benefits of integrated information system are:

- Simplification of business processes, so that companies become more competitive
- Master data management which is centralized improves data accuracy and management information
- Easier integration, among inter-systems, inter-departments or inter-states
- The support from IT department is easier because the new system is more up-to-date technology

If MAIS in an entity is integrated or is not integrated well, it will have an impact on MAIS characteristics such as flexibility of information system, reliability of information system (Dennis *et al*., 2009; Barganof *et al*., 2010) and efficiency of information systems (Laudon and Laudon, 2012).

MATERIALS AND METHODS

The method which is used is descriptive analytic method using survey approach. The survey method is used to obtain data from a natural particular place

Table 1: Range of categories respondents answer value

Description/interval	Categories
20,00-35,99%	Very poorly
36,00-51,99%	Bad
52,00-67,99%	Poorly
68,00-83,99%	Good
84,00-100,00%	Very good

(not artificial). Surveys were conducted to gather facts through questions to the intended respondents as a source of information about MAIS integration. Thus, the hypothesis in this research is the management accounting information system in SOEs meets the integration concept.

The target of research population is 83 SOEs. The survey research uses a sample of 56 SOEs in Indonesia which have been using computer-based accounting information system. The number of respondents that participated is as many as 236 operational managers. The selection of respondents target is operational managers, as operational managers run the daily tasks using information system and they are necessary to make decisions according to their daily tasks.

The questionnaire has criterion value as a basis to see MAIS in SOEs is into the category of poor, good or excellent. The criteria value which is used in this research refers to the categorization principle of the average respondents score in the adoption of Sugiyono it is based on the range of the maximum score and the minimum score divided by the number of the desired category using the following equation:

$$\text{The range of category} = \frac{\text{Maxscore-Minscore}}{\text{Total of category}}$$

To measure each variables it is used a questionnaire with statements that are adapted to the concept that was built. Every statement in the research questionnaire is given 1 for the lowest score and 5 for the highest score. From the assessment scores they are synchronized in percentages in which score 1 = 20% and score 5 = 100%. The categorization for each questionnaire item is divided into five (5) categories in which the interval range is used 16%. This value is obtained from the reduction of the highest value to lowest value and then divided by the number of predefined categories, the 5 (five) categories, as follows Table 1.

RESULTS AND DISCUSSION

Integration is the main keywords of a management accounting information system in a company as it is contained in the meaning on definition of accounting information system which is generally expressed by Wilkinson (1989) that accounting information system is an integrated framework in the companies which use physical resources to change economic data into financial information. This is confirmed by Belkoui (2002) and Susanto (2008).

In this research there are five indicators that can reflect MAIS integration. This is shown on the questions items which are posed to respondents (operational manager). In detail the results of respondent answers which indicated that MAIS in SOEs has fulfilled integration concept, it can be seen in Table 2.

The answers of operational managers (respondents) for each business sector in SOEs look varied, this happens because not all SOEs has management accounting information systems with well computer-based integrated. Part of SOEs has information system with computer-based and well integrated which is located in certain parts, such as in the finance, accounting and aales. As for the other parts, such as information system on the goods procurement or logistics and human resources are still not integrated with the main information system in the company.

Financial and insurance services sectors had the highest response value, this proves that the MAIS integration and the technology in this sector are very well developed due to the risk of running the business in this sector is much higher than the risk of business in other sectors. This condition is different from the sectors of Agriculture, forestry and fisheries which have MAIS integration of “less good” category. The reports on financial and insurance services sectors should not be delayed because it will have an impact on the customer confidence level and other investors while for Agriculture, forestry and fisheries sectors, the reports can still be done not up to date, although this is not justified.

Agriculture, forestry and Fisheries sector has MAIS integration value of “less good” category. During this time, operational managers who obtain data/information based on the work authority and responsibility still must contact the person in data processing. This proves that MAIS which is used in this sector has not fully had integrated information system. Neither is the information system between units inside nor outside the city, even the information system that is in one office is still not fully integrated. Due to the information system in this sector is still not at good level, the information system is still not able to be a good communication tool. When the information system is not able to serve as a communication tool, it will not affect good to the company

Table 2: Question Of respondent and category of main caracteristics of MAIS integration

Percentage (%) of respondent answer and category						
Questionaire item	Industry of manufacture	Industry of financial services and insurance	Industry of professional services and construction	Industry of big and small trade	Industry of agriculture, forestry and fisheries	Industry of transportation and warehousing
Information system which is used fused (integrated) with other departments in the local office (software hardware and networks fused), so it is easy to access the necessary data	77.92%	86.67%	75.92%	82.07%	62.14%	81.43%
Categories	Good	Very good	Good	Good	Poorly	Good
Information system which is used is fused (integrated) with branches or other units (in the city or outside the city), so it is easy to access the necessary data	68.75%	80.74%	71.84%	78.62%	59.29%	79.29%
Categories	Poorly	Good	Good	Good	Poorly	Good
Information system which is used is to simplify the work communication with the colleagues in different departments	78.33%	84.07%	81.22%	84.83%	63.57%	80.00%
Categories	Good	Very good	Good	Very good	Poorly	Good
Information system that is used is able to make company more competitive (competition)	78.33%	87.41%	79.18%	85.52%	68.57%	80.00%
Categories	Good	Very good	Good	Very good	Good	Good
During this time, obtain the information based on the work authority and responsibility of the without having to contact the one in data processing						
Categories	Good	Good	Good	Good	Poorly	Good
The value average total of respondents answers in each sector	75.50%	84.44%	76.90%	81.38%	63.14%	79.71%
Categories	Good	Very good	Good	Good	Poorly	Good

as proposed by Georgantzas and Katsamakas (2010) that the lack of information system integration has a damaging effect on business performance.

Thus, integrated MAIS is expected to simplify the running of business processes to achieve superiority in competition. The way to compete every SOEs sector will vary according to the industry type. It is as proposed by Nookabadi and Middle (2006), Gimenez (2006) and Ghobakhloo *et al*. (2011) for manufacturing industry. For hospital industry which is expressed by Hasselbring (2000) and Yucel *et al*. (2012) and for the venture capital industry it is raised by Davila and Foster (2005). Financial services and insurance sectors in SOEs use MAIS which is integrated to improve customer confidence in managing funds that is invested and customer satisfaction. Large and small commercial sector uses MAIS to facilitate the supply chain run in the fulfillment of inventory availability to customers and customer satisfaction. Transportation and warehousing sector requires MAIS to simplify and accelerate collecting and analyzing passenger data, so it can provide the best service to customers in order to avoid problems as it is raised by Anand.

Thus, MAIS which is integrated in SOEs is used to facilitate tactical and practical decision making. MAIS which is integrated well is able to increase the user satisfaction, especially in terms of decision making as it is proposed by Mia and Patiar (2002) that the managers feel satisfied when using MAIS for short-term and long-term decisions. So is the statement by Hamdan (2012) that user satisfaction of management accounting information system is based on the MAIS quality and intensity use of MAIS in supporting decision making. It is also appropriate to the objectives of MAIS and information systems in general it is stated by Hall (2011), Hansen and Mowen (2007) and Wilkinson (1989) to support the daily operations and produce information for decision-making.

The problems of information systems integration affect the characteristics of the other MAIS. The operational managers in SOEs generally mentions that the characteristics of MAIS such as flexible, reliable (Ong *et al*., 2009; Dennis *et al*., 2009) and efficient are in good categories but if it is traced based on SOEs sector, it is clear that there are some SOEs that are in less good category, especially in SOEs sector of Agriculture, Forestry and Fisheries (it can be seen in Table 3).

Based on, in general it can be said that MAIS in SOEs has MAIS value of flexibility, reliability and efficiency in good category but for the sector in SOEs it is still found MAIS which has value of flexibility, reliability and efficiency in less good category, such as in the sectors of Agriculture, Forestry and Fisheries. If information system in an organization is not easy to follow the condition that occurs (flexible) based on the work of operational manager, information system can not be relied on to assist the daily activities and if information system is not efficient it will affect the company ability to compete with the competitors.

The research results find that the cause of agriculture, forestry and fisheries sectors have flexibility, reliability and efficiency value which are less well categorized. The lack of MAIS flexibility because MAIS has not fully been able to be accessed or used by operational managers to obtain the information which is appropriate to the needs and responsibilities while they are working outdoors and in other department rooms. If there is a change (either internal policy changes or the changes from outside the company) system has not been able to be quickly adapted to the work of operational manager. So, it can be said if a MAIS has the flexibility it is useful for all those who are at an entity that will need it as a result of business development.

Based on empirical evidence, the lack of MAIS reliability value because the information system which is available has not met the needs of operational managers that is appropriate to the undertaken authority and responsibility. The results also find that the information system condition which is used by operational managers has not provided reliable information for decision making that is appropriate to the authorities and responsibilities of the operational managers. MAIS is said reliable if information system focuses on how far the users can assume that information system will be available for users to use (Dennis *et al*., 2009).

On the characteristics of the "efficiency" information system, there also occur the same conditions in the sectors of Agriculture, Forestry and Fisheries which have value that is "less good". This condition is proved that operational managers are still using inefficient MAIS, both in data storage, backup data and even there is inefficient MAIS in conducting the work completion even time job has been determined. It is mentioned specifically that if information system is efficiency, the information system has fast response time, efficient inputting, efficient output, efficient data storage and efficient backup. Information system is also said to be efficient when a job goes well according to the time or a predetermined schedule (Laudon and Laudon, 2012).

The research results answer the questions that arise, especially the problems in the quality of information system. The problems which have existed, such as inter-division system in manufacturing company that is not integrated affects the effectiveness of working process, the problems of assets integration in government and also the problems of reporting system in local government that is inefficient. The research also answers the problems that arise in SOEs as it is proposed by Japarin as Director of PT. Pelayaran Nasional Indonesia, that there are many SOEs that have not had integrated and inefficient information system yet, so it rises up the operational costs of some BUMN, including the logistics cost. The same as the statement of Setijadi as Chairman Supplay Chain Indonesia (SCI) that SOEs services are not integrated which cause logistical inefficiencies. Thus, companies that are incorporated in SOEs still need improvement in order to create Management Accounting Information System (MAIS) in SOEs which can be well integrated. There are several factors that can improve the quality or integration of management accounting information system in company, one of them is internal control effectivity, organizational culture, user competence and user involvement.

Table 3: Question of respondent and category of others caracteristics of MAIS

Caracteristics of MAIS	Questionnaire item	Sector of SOEs: Industry of manufacture (%)	Industry of financial services and insurance (%)	Industry of professional services and construction (%)	Industry of big and small trade (%)	Industry of agriculture, forestry and fisheries (%)	Industry of transportation and warehousing
Flexibility	While outside of the office and was in other department rooms may access the information system to obtain information based on the needs and authority	71.67	80.74	72.24	79.31	57.86	80.00
	Information system which is used can quickly be adapted to work if there are changing conditions (both internal policy changes and the changes from outside of the company)	72.08	80.37	73.06	77.24	62.86	80.71
	Information system which is used has an input option based on the work needs	77.08	82.59	77.96	81.38	63.57	83.57
	The systems which are used have selection report based on the needs required	76.25	83.33	78.37	81.38	67.14	83.57
	Average	74.27	81.76	75.41	79.83	62.86	81.96
Reliability	It is certain that the present available information system meets the needs based on the undertaken authority and responsibility	78.33	82.59	78.78	82.76	62.86	80.00
	Information system which is used generates reports that can be relied on to take a decision based on the authority and responsibility	76.25	84.44	79.18	82.76	69.29	81.43
	Average	77.29	83.52	78.98	82.76	66.07	80.71
Efficiency	Information system can obtain various reports from the same data input.	71.67	81.48	70.20	82.07	66.43	76.43
	Information system that is used has a rapid response in producing a report (not slow).	7.58	80.74	75.51	81.38	63.57	73.57
	Information system which is used saves data with small capacity, without spending large memory.	70.00	75.19	68.98	76.55	64.29	74.29
	Information system which is used simply conducts backup data.	78.33	80.37	71.02	82.07	70.71	78.57

Table 3: Coutinue

Caracteristics of MAIS	Questionnaire item	Industry of manufacture (%)	Industry of financial services and insurance (%)	Industry of professional services and construction (%)	Industry of big and small trade (%)	Industry of agriculture, forestry and fisheries (%)	Industry of transportation and warehousing
Sector of SOEs							
	Each work that is performed, it has predetermined time completion	81.25	85.56	84.90	82.07	76.43	83.57
	Average	75.17	80.67	74.12	80.83	68.29	77.29

CONCLUSION

The research results can be concluded that in general MAIS is the same as information system. It is able to support the company's goals and can also be used as a tool that gives the company a competitive advantage. As the confirmation of the information system integration concept in SOEs, the research finds that generally MAIS in SOEs is well integrated but specifically if it is seen based on business sector of SOEs it still contains MAIS which is not well integrated yet. If management accounting information system is not well integrated it can impact to the other management accounting information system characteristics such as flexibility, reliability and efficiency.

This research contributes to prove that there is not all of management accounting information system in SOEs companies has good integration. The research also proves that the problem of management accounting information system occurs in several types of industries such as the business type in SOEs sector.

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