The mediating effect of intellectual capital, management accounting information systems, internal process performance, and customer performance

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Submission date: 22-Nov-2019 08:32PM (UTC+0800)
Submission ID: 1219429173
File name: IJPPM_Hariyati,_bambang,_Noorlailie.pdf (213.44K)
Word count: 13353
Character count: 78377

The current issue and full text archive of this journal is available on Emerald Insight at:
www.emeraldinsight.com/1741-0401.htm

IJPPM
68,7

1250

Received 15 February 2018
Revised 28 August 2018
3 December 2018
Accepted 27 February 2019

The mediating effect of intellectual capital, management accounting information systems, internal process performance, and customer performance

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Abstract

Purpose – The purpose of this paper is to examine the mediating effect of intellectual capital (IC), management accounting information systems, internal process performance and customer performance (CP) on the relationship of strategies with financial performance (FP).

Design/methodology/approach – The population in this research was medium and large manufacturing company business units in Java. The business unit as the unit of analysis in this research is part of the organization that: is responsible for the production and marketing of a product or set of products; is formed by product type; has its own competitors which are different from competitors of other business units or divisions within a parent company; and has a manager who is responsible and has authority over the planning and implementation of strategies to achieve the specified profit target.

Findings – An innovation strategy that includes product innovation, process innovation and technology has an impact on FP if there is a good internal process performance, reliable management accounting information system and good CP. The internal process performance, which includes operations management processes, customer management processes, innovation processes and regulatory and social processes, optimizes the relationship of the strategy with FP. In this study, IC does not affect CP and internal process performance, nor does the management accounting information system affect FP. However, information systems affect FP through internal process performance and CP.

Originality/value – The originalities of this study are: the use of the continuous innovation strategy in an integrated manner between product innovation and process and information technology – this has never been conducted by other researchers, especially in Indonesia; the use of IC, management accounting information systems, internal process performance and CP as mediating variables; the use of an integrative approach by including variables of IC, management accounting information systems and non-FP as contextual variables related to contingency approaches that have never been conducted in previous research; the modeling of new related concepts with the one developed in the balanced scorecard; and using single mediating and multiple mediating on the influence of sustainable innovation strategies on FP.

Keywords Intellectual capital, Performance, Management accounting, Information system

Paper type Technical paper

International Journal of Productivity and Performance Management
Vol. 68 No. 7, 2019
pp. 1250-1270
© Emerald Publishing Limited
1741-0401
DOI 10.1108/IJPPM-02-2018-0059

1. Background

Nowadays organizations have to face several challenges due to the changing business environment. The management must be more professional in managing its resources to improve organizational performance. This results in environmental uncertainty and increasingly sharp levels of competition. Under this situation, management is required to achieve certain performance, in which they have to perform above the industry average (above average returns or AAR). Management may find it hard to achieve performance with the expected AAR. A high competitive advantage is needed to outperform competitors in a dynamic competitive market and innovative efforts are needed to sustain competitive advantage (Porter, 1996).

Competitive advantage can be achieved by having the right competitive strategy. Companies can try various strategies, including the prospector strategy typology proposed by Miles and Snow (1978), the differentiation strategy proposed by Porter (2008) emphasizing competition through innovation and the continuous innovation strategy proposed by Terziovski (2002). Terziovski (2002) divides sustainable innovation strategies (SIS) in three groups: the integrated, incremental and radical strategies.

According to Hambrick (1981), a corporate strategy is a pattern of decisions related to performance achievement. A multidimensional organizational or company performance must be achieved, so performance is in line with the expected AAR. Performance measurement can be viewed from a single and a comprehensive measurement. A single performance measurement sees only one aspect, while a comprehensive performance measurement includes various aspects. Performance measurement from a single aspect cannot inform a comprehensive aspect (Bhargava *et al.*, 1994). However, performance measurement must inform measurements from all aspects to make it comprehensive (Bhargava *et al.*, 1994; Venkatraman and Ramanujam, 1986). Designing an organizational performance measurement requires an appropriate model to describe the overall performance of the organization.

Several models of multidimensional performance measurement systems exist, including the balanced scorecard (later abbreviated as BSC) by Kaplan and Norton (1997), the Integrated Performance Measurement System according to Bititci *et al.* (1997) and SMART System by Ghalayani and Noble (1998). Until now, BSC is the most popular model according to Davis and Albright (2004). BSC covers non-financial and financial performance (FP) which consists of four perspectives. This is a financial perspective that results from three other perspectives, namely the customer perspective that shows customer performance (CP), the internal business process perspective that shows the performance of internal processes and learning and growth perspective.

There is a theoretical gap related to the strategy to achieve competitive advantage over performance with expected AAR. Industrial Organizational Theory (Industrial Organization), hereinafter abbreviated as I/O, emphasizes that to achieve AAR-suitable performance, a company has to pay attention and study the external factors and environment (Porter, 1996). According to the resource-based theory, abbreviated as RBT, to achieve to achieve AAR-suitable performance, the characteristics and internal factors of the company are the affecting factors (Barney, 1991). To cover the gap between the two theories, the contingency theory is used in this study.

The reason to use the contingency theory is because this concept explains that the design of an organization will be effective and can be applied universally only in certain conditions (Otley, 1980). Each organization is different, so the organizational design is also different. Implementation of RBT and I/O is very dependent on contingency variables as described in the contingency theory. The use of the contingency theory motivates the researchers to identify conditions that are fit for the design of a particular organization and develop theories that support it.

Several previous studies related to the I/O model show that external factors are important. External environmental factors play a role in business because they determine strategies that will be implemented (Covin and Covin, 1990; Miller and Friesen, 1982). Furthermore, Miller and Friesen (1982) state strong associations between environmental changes and strategic planning, so there are strong efforts to anticipate changes and conditions full of uncertainty. Bird (1990) also states that heterogeneity, complexity and uncertainty in the industrial environment will influence the intensity of strategic planning. However, Hopkins and Hopkins (1997) conclude that strategic planning does not affect FP, yet FP will improve strategic planning. The previous studies show different results related to performance with the implementation of a suitable strategy.

Previous research related to RBT has been carried out by Barney (1991), finding that competitive advantage can only arise in very diverse situations and in instable situation of internal resources. Barney *et al.* (2001) also state that companies cannot expect to implement sustainable competitive advantages that other organizations have, because these advantages

are scarce, unique and irreplaceable. RBT confirms that resources originating from internal organizations are more important for companies than resources derived from external factors in achieving and maintaining competitive advantage (Brahmana, 2007). David (2005) states that organizational performance is determined by internal resources that can be grouped into three categories, namely physical resources, human resources and organizational resources including company structure, corporate planning and strategy processes. RBT invites attention to managerial and practical strategies for the development of new competitive advantages and wealth creation. Ireland *et al.* (2003) support this, that if a company could manage resources and capabilities in a strategic and structured manner, the competitiveness advantage would increase. Thus, from a number of previous studies on RBT, it can be concluded that competitive advantage is built based on internal resources.

Previous research on the contingency theory has been carried out by Otley (1980) to deepen, analyze and design control systems, especially in the field of management accounting systems. Furthermore, Hirst (1987) confirms that the development of an organization is influenced by differences in environmental features. The performance of an organization depends on uncertainty, internal factors, feedback with other organizations and external interaction. Riyanto (1999) mentions that it is interesting to examine the management accounting design to know the reliability of management accounting systems with a strategic uncertainty approach.

From the results of several empirical studies related to the contingency theory, the present study aims to fill the gap between I/O and RBT by including intellectual capital (IC), internal process performance and CP in the contingency variables as mediating variables not studied before. RBT was developed as a complement to the I/O model (Porter, 1980, 1985), or it can be said that the I/O model provides a foundation for RBT. Therefore, it can be said that competitive advantage can be generated through effective and efficient management of resources by considering internal and external factors, which also depend on the contextual variables in the contingency approach.

Organizational or company performance is multidimensional because it includes financial and non-FP. According to Kaplan and Norton (1997), FP evaluates the profitability of strategy implementation. FP focuses on revenue growth, reducing or saving costs and increasing asset use. Good FP depends on the non-FP, such as internal process performance and CP. The internal process performance, including management operation processes, customer management processes, innovation processes and regulatory and social processes, will be even better if supported by the IC and the management information system (Kaplan and Norton, 1996).

According to Kaplan and Norton (1992, 1996, 1997), the internal process performance, CP and FP are the result of the process of growth and learning in the company, which comes from three things, namely humans, systems and procedures and the existence of the organization. With regard to people, the role of IC is very important, because it is related to IC, customer capital and structural capital. In terms of the system, a reliable management accounting information system is needed. Good internal process performance is determined by the role of IC, management accounting information systems and the implementation of appropriate strategies. Good internal process performance has an impact on CP and FP.

According to RBT, IC fulfills the characteristics as a unique resource that produces competitive advantage in formulating strategies, so it can create values for the company, i.e. performance with expected AAR. At present, the economic development is determined by reliable information and knowledge as a result of globalization. This brings an increased attention to IC (Stewart, 1997; Hong *et al.*, 2007). IC is a variable to determine the value of a company (Hong *et al.*, 2007; Guthrie, 2001). Some state that IC includes three main elements (Stewart, 1997; Sveiby, 1998; Bontis, 1999), namely human capital, structural capital or organizational capital and relational capital or customer capital. Similarly, Harrison and Sullivan (2000) explain that organizational success is largely determined by the routine operations to optimize the values of the IC. This is also

consistent with Bontis (1998, 2001) that there are positive and significant relationship between structural capital and business performance.

In the globalization era, all business sectors use information systems to process business transactions, control industrial processes, support business communication and increase office productivity effectively and efficiently. A reliable information system is expected to play a direct role in achieving the company's strategic goals or objectives. Therefore, the strategy applied has an impact on the need for reliable and accurate information systems including management accounting information systems.

Business information must be reliable and accurate. Information from a reliable and accurate accounting system, according to Chenhall and Morris (1986), is one that has a broad scope, timeliness, aggregation and integration. The contingency approach states that the level of the organizational availability and information characteristic of the accounting system may not always be the same for every organization, as there are other factors that influence the level of need for the accounting information management. These factors include environmental uncertainty, technological complexity (Chenhall and Morris, 1986), task uncertainty (Chong, 1996), strategy uncertainty and applied strategies.

The contingency theory is needed to evaluate environmental factors (intensity of competition, strategy and environmental uncertainty) that can lead to a more effective management accounting system. Managerial performance is influenced by the interaction and implementation between management accounting information systems and business strategies. Implementation of a fit strategy requires reliable information. The information provided by the management accounting information system is needed for decision making. Management accounting information systems require information technology (Abernethy and Guthrie, 1994).

Information technology provides opportunities for companies to improve planning, coordination and control. Information technology can also be used to gain competitive advantage in world markets through product innovation and process innovation (Mahmood and Mann, 1993; Kettinger *et al.*, 1994; Mata *et al.*, 1995; Roos and Roos, 1997). Innovation in information technology is important for companies to have a competitive advantage so they can have good financial and non-FP. Innovation in strategy implementation by utilizing technology in a sustainable and integrated manner affects FP.

Innovation strategies affect company performance. Innovation is the most important factor for companies to compete effectively and efficiently in the domestic and global markets. Innovation is considered as one of the most important factors of a strategy (Davila, 2000; Hitt *et al.*, 2001). Organizations that have a high level of innovation suitably and sustainably applied will be able to develop a competitive advantage and to achieve a higher level of performance (Hurley and Hult, 1998; Davila, 2000; Weerawardena, 2003).

Competitive advantage can be achieved through a process of innovation, both product and process innovation. Innovation is an organizational capability that is valuable, unique, difficult to imitate and cannot be replaced (Henri, 2006). Thus, innovation is one source of sustainable competitive advantage and has a positive and important contribution to organizational performance.

Previous studies have explained that high levels of innovation applied continuously in strategy implementation tend to lead to better corporate performance (Weerawardena, 2003; Bisbe and Otley, 2004; Jantala, 2010). Innovation strategies applied on an ongoing basis depend on contingency factors. The contingency approach also states that the influence of strategies (including innovation strategies) on performance depends on structural factors including management control systems, human resource capabilities and internal process performance (Chenhall, 2006). Innovation strategies can be transformed into performance improvements; this requires the support of the internal and external environment of the organization (Bisbe and Otley, 2004). Management control systems, human resource capabilities (IC) and internal processes are important parts of the internal environment needed

to support the transformation of the innovation strategy and process to become effective performance. The management control system is closely related to the role of IC and management accounting information systems.

Innovation and product development activities in manufacturing companies associated with performance are important and must be considered in the effort to increase productivity and global competition. Innovations in industrialization, trade and services include the idea of creation, selection and development or improvement of products, processes and technologies effectively and efficiently (Zahra and Das, 1993; Lucas and Ferrel, 2000). Innovations in a sustainable manner can improve the position of manufacturing companies in achieving the status as producers of world-class quality goods. By using new technology, creation, introduction (commercialization) or marketing of new products and adoption of innovative production processes, companies can solve competition problems effectively (Swamidass and Newell, 1987; Salaman and Storey, 2002). This innovation strategy will have an impact on internal performance through the role of IC and management accounting information systems as well as the internal processes, which in turn will affect CP and improve FP.

This study was conducted on manufacturing companies in Java, with the following reasons. First, the growth rate of manufacturing companies fluctuated since 2012. Second, based on data from the Java Industry and Trade Service, manufacturing companies in Java in 2012 ranked third after DKI Jakarta and East Kalimantan in terms of export performance, which contributed 10.04 percent to export performance in Indonesia. Third, Java contributed the largest GDP of 20.85 percent (Majalah Industri, 2013). Fourth, there is very tight competition over product yields in manufacturing companies in Java. Fifth, there have been products from overseas coming in Java. With such condition, the manufacturing companies in Java must implement innovation strategies in a sustainable manner, as to compete in the globalization era.

Manufacturing companies have quite unique characteristics – interrelated and complex work capacities ranging from the production process to finished goods ready for sale. Manufacturing companies in Java contribute greatly to the performance of Java's non-oil and gas exports after DKI Jakarta and East Kalimantan. The Governor of Java, Soekarwo, in his speech on empowerment of MSMEs stated that Java's manufacturing products became one of the most preferred ones by export destination countries. He also stated that the development of the manufacturing sector had to be specifically guided in the free trade. Manufacturing companies must be creative in producing their goods.

Innovative products and the implementation of a fit strategy are important. This condition must be maintained, despite the fact that there are several manufacturing companies that cannot win the competition. Based on data from BPS (2014), several companies are unable to win competition, marked by negative growth.

These conditions are caused, among others, by inability of management to anticipate changes that occur within the internal and external environment of the organization, to the inability of the company to manage the information available to be used in making the right decisions. This is also possible due to the lack of qualified IC. Management accounting information systems and IC are important instruments that support management to manage information. It is very important that the information presented is relevant, accurate, timely and sustainable manner for the benefit of the company. This may also be caused by the less competent IC so internal processes are not good. If this continues, performance will be at stake, both CP and FP.

The motivation of this study is closing the theory gap in previous empirical studies on the resource-based view model and the IO model by incorporating contingency variables; examining the effect of SIS on corporate FP mediated by management accounting information systems, IC, internal process performance and CP; and proving that the innovation strategy of a manufacturing company can serve as guidance for executives in achieving good FP. The originalities of this study are: the use of the continuous innovation strategy in an integrated manner between product innovation and process and information technology – this has never

been conducted by other researchers, especially in Indonesia; the use of IC, management accounting information systems, internal process performance and CP as mediating variables; the use of an integrative approach by including variables of IC, management accounting information systems and non-FP as contextual variables related to contingency approaches that have never been conducted in previous research; the modeling of new related concepts with the one developed in the BSC; and using single mediating and multiple mediating on the influence of SIS on FP.

Based on the explanation above, this study aims to examine the mediating effect of IC, management accounting information systems, internal process performance and CP on the relationship of strategies with FP.

2. Research framework

The contingency theory, RBT and the I/O Theory become the grand theories in this study. The theories and views above play a very important role in explaining what factors contribute to performance related to strategy implementation. In contingency theory, organizations must adapt to various contingency factors, such as organizational structure, environment, organizational size and business strategies if the organization wants to achieve high performance. The contingency theory assumes the contingent fit between competing variables and their contextual variables will bring the organization to good performance (Chenhall, 2006). Furthermore, the I/O approach emphasizes on how to earn income above the industry average by studying the external environment. According to RBT, AAR for a company is determined by the characteristics and internal factors within the company. This model focuses on developing or acquiring valuable resources and capabilities, which are difficult or impossible for competitors to imitate. RBT believes that core competencies are important for company's competitive advantage, strategic advantage, and show the company's ability to obtain AAR. There is a theoretical gap in this case; therefore, throughout the present study the researchers are motivated to close the gap using the contingency theory. Besides that, the results from previous studies seem inconclusive.

IC needs to be considered related to strategy implementation. Its existence has an impact on performance because it meets the criteria as a unique resource that can create a competitive advantage for the company so it can create value for the company. The intended value is better performance within the company.

A company is considered to achieve fit if there is conformity between the implemented competing strategy and the management accounting information system practice, including the use of information technology systems and appropriate IC. This will have an impact on the internal processes performance, which include operations management processes, customer management processes, innovation processes and regulatory and social processes, which means in brief the performance of the internal process consists of the followings. The first is the innovation process, which is the most important part of the entire production process. The second is the operational process, which is an activity carried out by the company, starting from the moment of receipt of orders from the customer until the product is sent to the customer. The operating process emphasizes the delivery of products to customers efficiently and on time. This process, based on facts, becomes the main focus of the performance measurement system of most organizations. The third is the after-sales services, which can be in the form of guarantees, replacement for damaged products and corporate responsibility for the environment.

If the internal process performance is good, it is expected that CP will also be good. Measures of CP are product or service attributes, relationship and image. The three CP benchmarks explain the following aspects: market share, describing business propositions sold by a business unit in a particular market in the form of number of customers, funds spent or unit volume of products sold; customer retention, measuring how far the company managed to retain old customers; customer acquisition, measuring the success of business units by attracting or gaining new customers or businesses; customer satisfaction, measuring and assessing the level

of customer satisfaction and how far customers are satisfied with the service company; and customer profitability, measuring the net profit obtained from a particular customer or segment, after calculating various expenses used to meet these customer needs.

CP is used to find out how companies measure the market value they control and the potential markets they might be able to enter. This measurement illustrates the performance regarding the "how" and "what" the company must present to achieve high levels of satisfaction, loyalty, retention and customer acquisition. The customer value proposition describes the attributes presented by the company in the products or services sold to create customer loyalty and satisfaction.

Measurement of customer value can be seen from product or service attributes, which consist of function, price and product quality. Good customer relationships can be seen from aspects of product distribution to customers, including the response of the company, delivery time and how the customer feels after buying the product or service from the company concerned. The image and reputation of the company describes the intangible factors for the company to attract customers to connect with the company or buy products.

Fit CP will have an impact on FP. Indicators of FP are the improve cost structure, increase asset utilization, expand revenue opportunity and enhance customer value, which in turn have an impact on increasing profits and increasing asset use.

2.1 Intellectual capital

IC is a substantial thing in determining company activities. It provides a diversity of different organizational values such as increasing the benefits of acquiring innovations from other companies, consumer loyalty, cost reduction and productivity improvements. IC includes human capital, customer capital and structural capital (Bontis, 1996). Human capital is the knowledge, skills and experience of employees which includes know-how, education, vocational qualification, work related to knowledge, job assessment, psychometric assessment, work associated with competence, entrepreneurial spirit, innovative spirit, proactive and reactive abilities, as well as the ability to change. Human capital is also a source of innovation and renewal for the company, whereas customer capital is a resource that is linked to the company's external relations with consumers, suppliers or partners in research and development. Good management of customer capital will improve the competencies in organizational activities or responses to market changes. Besides human capital and customer capital, structural capital is the knowledge that will remain in the company consisting of two elements such as intellectual property (patents, copyright, design right, trade secret, trademark and service mark) and infrastructure assets (management philosophy, company's culture, management processes, information systems, network systems and financial relationships). Structural capital arises from organizational processes and values that reflect the company's internal and external focus as well as future development and renewal.

Based on the framework and explanations described above, the research model was developed as follows.

Based on the conceptual framework that has been described, the research hypothesis is prepared. This research hypothesis is a temporary answer to the formulation of the problem to be tested using appropriate statistical tests. The hypotheses proposed in this study are as follows.

2.2 The relationship of innovation strategies, intellectual capital, customer performance and financial performance

Harrison and Sullivan (2000) explain that the success of a company is strongly influenced by the routine activities of the company in optimizing the values of the IC. IC provides different views and diversity of organizational values such as increased profits, acquisition of innovation from other companies, consumer loyalty, reduced costs and improvements in

productivity and innovation. Innovation is a process within the organization in utilizing skills and resources. It aims to develop new products and or services or to build new production and operational systems so that the company is able to answer customer needs. The argument about the positive influence of innovation strategies on performance based on RBT is that innovation is a very important factor for companies to compete effectively in domestic and global markets and is considered as one of the most important factors of organizational strategy (Davila, 2000; Hitt *et al.*, 2001).

Bontis (1998) recognizes that IC is difficult to understand, but after being found and empowered properly, it can make a new resource base for an organization to compete and win. IC is a knowledge-based company resource and in the form of intangible assets, which can be value added to the company by paying attention to human capital (HC), structural capital (organizational capital) and customer capital. This IC can be used by companies to create innovation and competitive business competition. Competent IC will have an impact on better CP because it will increase market share, maintain the number of existing customers, increase the number of customers, increase customer satisfaction and also improve CP because it will provide more value to customers.

Customer capital is a component of IC that provides unique and real values in relation to customers that impact on CP. Customer capital describes a harmonious relationship or association network owned by the company and its partners, coming from reliable and quality suppliers, coming from loyal customers feeling satisfied with the services of the company concerned and coming from the company's relationship with the government and with local communities. Customer capital can occur from various parts outside the corporate environment. Competent customer capital can add value to the company (Sawarjuwono and Kadir, 2003).

Gloet and Terziovski (2004) explain the importance of human resource management when developing innovation strategies for product and process innovation. Knowledge management supports innovation performance through a simultaneous approach from soft human resources management practices and hard information technology practices. Both of these are implemented together so that they can synergize well. The innovation strategy implemented by the company determines the competent IC needs and will have an impact on CP and FP, as to achieve the comprehensive performance expected by the company.

Business success in this century is determined by innovations implemented in a sustainable manner (Hamel, 1999). Innovation is defined as a process within the organization in utilizing skills and resources to develop new products and or services or to build new production and operational systems. By innovating in various fields and applying technology, the company is able to answer customer needs (Jones, 2004). Terziovski (2002) provides evidence that innovation has an influence on internal process performance indicators, such as company productivity. The prospector typology strategy (Miles and Snow, 1978) and differentiation strategy (Porter, 1985) emphasize the existence of an innovation process in the implementation of strategies to deal with high environmental uncertainty and high levels of competition. Previous research that has been done mentions that innovation has become part of a business strategy that requires the role of IC (Christensen and Overdorf, 2000; Pyka, 2002; Christensen, 2001; Govindarajan and Trimble, 2005).

Therefore, innovation in strategy implementation has an impact on FP, but requires the role of competent IC and CP, so the first hypothesis proposed is:

H1. The innovation strategy influences the FP mediated by the company's IC and CP.

2.3 The relationship of innovation strategies, intellectual capital, internal process performance, customer performance and capital performance

Competent IC results in better internal performance of the company. Internal process performance is related to the process of innovation, operation and after-sales service.

The innovation process is related to the process of creating products and services that are in line with customer needs and increasing the use of technology in the effort to develop new products, while the operating process is related to efficient production processes and timely delivery to customers and after-sales service after customers make purchases. Good internal process performance will have an impact on better CP because it will increase market share, maintain the number of existing customers, increase the number of customers, increase customer satisfaction and also improve CP, because it will provide more value to customers.

Structural capital is the ability of an organization or company to fulfill its routine processes and structures that support management's efforts to produce optimal performance and overall business performance. The examples are the operational system, manufacturing process, organizational culture, management philosophy and all forms of intellectual property the company owns. Reliable structural capital will bring good internal processes that ultimately affect CP.

Therefore, innovation in strategy implementation has an impact on FP through IC, in this case is structural capital, and internal process performance. Innovation in strategy implementation will increase the company's productivity and CP. From this explanation, the second hypothesis proposed is:

H2. The innovation strategy influences the FP mediated by the IC, internal process performance and CP.

2.4 The relationship of innovation strategies, intellectual capital, internal process performance and financial performance

As stated above, IC provides diversity, uniqueness and different values for different organizations, such as increasing profits in innovation, having competitive advantage from other companies, fostering customer loyalty, efficiency and cost effectiveness and improving productivity and innovation. Innovation is a process within the organization to utilize skills and resources to develop new products and/or services or to build new production and operational systems so the company is able to answer customer needs.

Gloet and Terziovski (2004) explain the importance of human resource management when developing innovation strategies for product and process innovation. Knowledge management supports innovation performance through a simultaneous approach from soft human resources management practices and hard information technology practices. Both of these are implemented together so that they can synergize well. The strategy implemented by the company determines the need for IC in order to achieve good internal process performance.

Terziovski (2002) provides evidence that innovation has an influence on internal process performance indicators, such as company productivity. The prospector strategy typology, differentiation strategy and integration strategy emphasize the existence of an innovation process in the implementation of strategies to deal with high environmental uncertainty and high levels of competition.

Internal process performance is related to the process of innovation, the process of operation and after-sales service. The innovation process is related to efficient production processes as well as timely delivery to customers and after-sales service after the customer has made a purchase that is well served. Good internal process performance will have an impact on production efficiency, saving production costs and improving product quality as well as increasing asset use, which in turn leads to good FP. Therefore, innovation in strategy implementation requires the role of competent IC, which in turn affects the internal process performance; innovation in the implementation of the strategy will increase the productivity of the company, which ultimately affects FP. Thus, the third hypothesis proposed is:

H3. The innovation strategy affects FP mediated by the company's IC and internal process performance.

2.5 *The relationship of innovation strategies, internal process performance and financial performance*

As already stated above, the strategy with the implementation of innovation has an impact on internal process performance. Internal process performance is related to the process of innovation, the process of operation and after-sales service. The innovation process is related to efficient production processes as well as timely delivery to customers and after-sales service after the customer has made a purchase that is well served. Good internal process performance will have an impact on better CP because it will increase market share, maintain the number of existing customers, increase the number of customers, increase customer satisfaction and also give more value for customers.

In the previous discussion, innovation is a process within the organization to utilize the skills and resources to develop new products and/or services or to build new production and operational systems so that the company is able to answer customer needs (Jones, 2004). Terziovski (2002) provides evidence that innovation has an effect on the performance of internal processes that subsequently affect CP and FP. Therefore, innovation in the implementation of the strategy will affect the internal process performance because it will increase the productivity of the company, which in turn has an impact on FP; thus, the fourth hypothesis proposed in this study is as follows:

H4. The innovation strategy influences FP mediated by the company's internal process performance.

2.6 *The relationship of innovation strategies, internal process performance, customer performance and financial performance*

Internal process performance is related to the process of innovation, the process of operation and after-sales service. The innovation process is related to efficient production processes as well as timely delivery to customers and after-sales service after the customer has made a purchase that is well served. As already stated above, the strategy with the implementation of innovation has an impact on internal process performance. Good internal process performance will have an impact on better CP because it will increase market share, maintain the number of existing customers, increase the number of customers and increase customer satisfaction and also give more value for customers. Therefore, innovation in the implementation of the strategy will affect the internal process performance because it will increase the company's productivity and CP, which ultimately have an impact on FP. Thus, the fifth hypothesis proposed in this study is:

H5. The innovation strategy influences FP mediated by internal process performance and CP.

2.7 *The relationship of innovation strategies, management accounting information systems and financial performance*

The innovation strategy covering all aspects applied by the company will affect the need for reliable information. Reliable information is very important in implementing innovation strategies. Bromwich (1990) argues that information in management accounting information systems can help companies face the challenges of a market full of competition. The application of the innovation strategy focuses on increasing the company's value added to exceed its competitors and helping managers monitor performance in a competitive environment full of uncertainty. Information management accounting system is one of the management accounting products. Management accounting information systems play a role to predict the consequences that may occur on various alternatives carried out in various activities such as planning, controlling and decision making. Information available in the organization will be effective if they can support information users or decision makers. Suitability between information and the

needs of decision makers will improve the quality of decisions taken, and ultimately can improve company performance (Gerloff *et al.*, 1991). The strategy applied has an impact on the need for reliable information systems including management accounting information systems. Information from a reliable and accurate accounting system, according to Chenhall and Morris (1986), is one that has broad scope, timeliness, aggregation and integration criteria. Therefore, innovation in the implementation of the strategy determines the needs of a reliable management accounting information system, so the sixth hypothesis proposed in this study is:

H6. The innovation strategy influences the FP mediated by the management accounting information system.

2.8 *The relationship of innovation strategies, management accounting information systems, internal process performance and financial performance*

The innovation strategy covering all aspects applied by the company will affect the need for reliable information. Reliable information is very important in implementing innovation strategies. Bromwich (1990) argues that information in management accounting information systems can help companies face the challenges of a market full of competition. The application of the innovation strategy focuses on increasing the company's value added to exceed its competitors and helping managers monitor performance in a competitive environment full of uncertainty. Information management accounting system is one of the management accounting products. Management accounting information systems play a role to predict the consequences that may occur on various alternatives carried out in various activities such as planning, controlling and decision making. Information available in the organization will be effective if they can support information users or decision makers. Suitability between information and the needs of decision makers will improve the quality of decisions taken, and ultimately can improve company performance (Gerloff *et al.*, 1991). The information technology in the management accounting information system provides an opportunity for global companies to improve coordination and control, or to gain competitive advantage on world markets because it has an impact on internal process performance (Clemons and Row, 1991; Mahmood and Mann, 1993; Kettinger *et al.*, 1994; Mata *et al.*, 1995; Ross *et al.*, 1995). Innovation in information technology is an important strategy. Innovation implemented by the company will determine the need for a broad, aggregated, timeliness and reliable management accounting information system in order to achieve good internal process performance, which in turn has an impact on FP. Therefore, innovation in the strategy implementation determines the need for a reliable management accounting information system that will ultimately affect the internal process performance and FP:

H7. The innovation strategy influences the FP mediated by the management accounting information system and the internal process performance.

3. Research method

The population in this research was medium and large manufacturing company business units in Java. Business units are part of a company considered as the profit center. According to Anthony *et al.* (1992, p. 172), "business units or divisionalization when such organizations are responsible for both the manufacturing and marketing of a product or family of products." Hansen and Mowen (2007, pp. 419-420) define divisionalization as a process of decentralization based on the type of produced goods or services or by geographical. As the profit center, division managers measure their performance based on sales and costs or obtained profits. Kotler and Keller (2012, p. 47) mention business units as strategic business units which have the following characteristics: a related single business or business group and each has a separate plan; having its own competitors; and having a

manager responsible for strategic planning and achieving certain profit targets and controlling various factors that influence profit achievement.

Based on the description above, the business unit as the unit of analysis in this research is part of the organization that: is responsible for the production and marketing of a product or set of products; is formed by product type; has its own competitors which are different from competitors of other business units or divisions within a parent company; and has a manager who is responsible and has authority over the planning and implementation of strategies to achieve the specified profit target.

According to the Statistics Indonesia, medium and large manufacturing companies are manufacturing companies with more than 100 employees. According to data from the Ministry of Industry, there were 1,266 manufacturing companies with various business fields until the beginning of 2014. After further analysis on the number of manufacturing companies in Java that managed production processes or processing raw materials into finished goods, 389 companies were determined.

The unit of analysis of this research was the business unit. If it was assumed that one business unit was taken from one company, then the population of this research was 389 business units. Sample determination was done by Yamane's (1973) approach as quoted by Ferdinand (2006) with the following formula:

$$n = \frac{N}{1 + ND^2},$$

(21)

where n is the number of samples; N the population size; and D is the specified precision or % looseness of inaccuracy due to sampling errors that can be tolerated.

By using this formula, the research sample was at least 80 respondents or 21 percent. The researchers used questionnaires which were sent directly to respondents through surveyor personnel and by fax or e-mail to 389 selected manufacturing companies (not including companies used as the trial). As an effort to increase the response rate, an interview was made via telephone before the questionnaire was sent. Respondents in this research were business unit managers or business unit financial managers or resource managers or operations managers. In this case, the questionnaire could be filled by the business unit manager or the business unit financial manager or the resource manager or the operations manager. The business unit manager was chosen as the respondent because the business unit manager is the top leader who determines the policy and understands the system in the business unit she/he leads and has the authority to carry out the innovation strategy. Financial managers, resource managers and operations managers were also selected as respondents because they are considered to have adequate professional knowledge relating to the management accounting information system development and have the authority in innovation, human resources management and the company's operations process.

The instrument used in this study is questionnaires which were filled to the extent to which respondents agreed and measured with five-point Likert scales. The total questions in the questionnaires were 48 questions. To collect the data, this study used a survey method that the questionnaires were sent to respondents who were selected as samples determined by certain procedures. Questionnaires were analyzed related to the completeness of the filling and then tabulated. A total of 135 respondents filled out the questionnaire completely. It meant the response rate of the questionnaire was 35 percent of the total population. Based on this formula and based on several previous studies, the number of samples fulfilled the requirements for further analysis.

The research instrument used in this study is a questionnaire distributed to the selected respondents to obtain primary data. Questions for the strategy variable refer to the research conducted by Terziovski (2002), for management accounting information systems refer to the instrument developed by Chenhall and Morris (1986), for IC refer to the instrument

developed by Bontis (1998) and for internal process performance, CP and FP refer to the BSC concept developed by Kaplan and Norton (1992).

4. Findings and discussions

4.1 The relationship of innovation strategies, intellectual capital and financial performance

Corporate IC and CP do not mediate the relationship between SIS and FP. This is because there is a non-significant mediating variable that is IC and CP.

Strategies and IC show a statistically significant relationship; this is because the implementation of the strategy requires the role of competent IC. Human capital, structural capital and customer capital are needed in the implementation of innovation strategies carried out on an ongoing basis. This is in accordance with the opinion of Harrison and Sullivan (2000) that the success of a company shown by the results of its performance is strongly influenced by the company's routine efforts to optimize the values of the IC of the company. IC (human capital, structural capital and customer capital) provides support and diversity of different organizational values such as increasing profits, acquisition of innovation from other companies, consumer loyalty, efficiency and effectiveness of cost usage and productivity improvements (processes and products) in innovating and implementing information technology.

Innovation is a process in an organization that utilizes skills and resources to develop new products and services and build new production and operational systems. Innovation enables a company to answer customer needs. Association and innovation strategy relationships applied in a sustainable manner with company performance based on RBT are critical for companies to compete effectively in domestic and global markets and are considered as one of the most important components of organizational strategy (Davila, 2000; Hitt *et al.*, 2001). Gloet and Terziovski (2004) also explain the importance of human resource management as part of human capital when developing innovation strategies for product innovation and process innovation. Knowledge management supports innovation performance if there is a comprehensive and simultaneous approach from soft human resources management practices and hard information technology practices. If this is implemented together, it will be able to work well. The strategy implemented by the company will determine the need for IC in order to achieve good performance.

Based on the findings, as many as 44 percent of respondents strongly agreed and 49 percent of respondents agreed to questions related to product and process innovation. This indicates that manufacturing companies in Java generally always make innovative products that can be reached by customers and provide customer satisfaction. Companies in Java have always seen themselves as one of the most innovative in the market, always striving to find out customer needs that have not been fulfilled by developing new products and services to meet these needs as stated by the Governor of Java at the opening of the EXPO of Java manufacturing products. Product and process innovation requires the role of competent IC. Therefore, the implementation of an SIS requires the role of competent IC.

The main focus of innovation in manufacturing companies in Java is the creation of unique products and production efficiency as well as new ideas on products to face globalization and increasingly sharp competition. The creation of new ideas is in turn implemented into new products and new processes to provide and channel better customer value.

Product innovation is manifested in a new product or service that is introduced to the market to meet market needs. Process innovation describes changes in the way an organization produces the final products and services of a company. Process innovation is a mean to improve quality and also cost savings. This reflects that the adoption of the innovation process is recognized to improve production efficiency and the quality of products.

The existence of product and process innovation requires reliable information technology. Based on the results of this study, manufacturing companies put forward technology in the implementation of their strategy. The results of the study show 43 percent

of respondents chose strongly agree and 49 percent of respondents chose agreed to the questions related to technology in the implementation of the strategy. This illustrates that the innovation strategy also cannot be separated from the role of technology. Information technology is a key element in the strategic information system, and it still has a great opportunity to be elaborated in the implementation of the strategy in relation to organizational performance. Information technology includes technological capabilities, economic considerations in utilizing technology, application feasibility, skills and ability to develop applications, pressure on certain organizations and industries to improve performance and capabilities of organizations to implement information technology. The results of the study show that almost all manufacturing companies in Java put forward information technology in the implementation of their strategies.

In this study, IC is the sum of the three main elements of the organization, which are indicators of the IC, namely human capital, structural capital and customer capital related to knowledge and technology. IC provides more value to the company in the form of competitive advantage. During the globalization era, product and process innovation and information technology as well as intense business competition have forced companies to change the way they do business. To win the competition, companies must quickly change their strategy from a labor-based business to a knowledge-based business, so that the main characteristics of the company become a science-based company.

A resource can be said to have a competitive advantage if it meets the following criteria: these resources enable the company to capture various business opportunities and overcome various challenges; these resources have their own uniqueness and are difficult to obtain in the market and are only owned by some companies; and these resources can be used by companies to provide benefits to the company. RBT explains that internal resources owned by the company (both tangible and intangible) affect performance, which will ultimately increase the value of the company. One of the resources owned by the company from the intangible assets is IC.

The relationship between IC and CP shows results that are not statistically significant. This indicates that there is no relationship between IC and CP. CP which includes product attributes, customer relationships and brand image does not affect IC needs. Manufacturing companies in Java pay little attention to the importance of IC. This can be seen from the lack of empowerment related to human capital, structural capital and customer capital. Almost all manufacturing companies in Java do not carry out financial planning related to empowerment and IC financing. The use of physical and financial assets and fixed assets still dominates to contribute to the company's performance.

The relationship between IC and CP is not statistically significant. This indicates that there is no relationship between IC and CP. CP, which includes product attributes, customer relationships and brand image, does not affect IC. Manufacturing companies in Java pay little attention to the importance of IC. This can be seen from the lack of empowerment related to human capital, structural capital and customer capital. Almost all manufacturing companies in Java do not carry out financial planning related to empowerment and IC. The use of physical and financial assets and fixed assets still dominates to maintain company performance.

Human capital, which is part of IC in manufacturing companies in Java, has not been able to create value (value creation) for the company. The essence of human capital lies in the creativity, intelligence and skills of employees. With their creativity, skills and intelligence, employees of manufacturing companies in Java seem to have not been able to do their best way, so the company feels that it does not get the best performance from its employees. With all the efforts given, employees in manufacturing companies have not been able to make their company different from other companies. Therefore, empowerment of human resources related to human capital is indispensable. Most manufacturing companies in Java

do not have employees with ideal competencies; this results in employees neither being able to work with teams, nor to have their own ideas nor to plan according to the schedule.

The next element of IC is structural capital. Structural capital is the ability of an organization to fulfill the routine process and its structure that supports employees' efforts to produce optimal intellectual performance and overall business performance; for example, operational system, manufacturing process, organizational culture, management philosophy and all forms of intellectual property. In relation to structural capital, manufacturing companies in Java have not optimized the ability of employees, operational system, manufacturing process, organizational culture, management philosophy and all forms of intellectual property. Most manufacturing companies in Java do not have a clear operating system procedure, because the company does not have a database for relevant information. This has resulted in few ideas developed by the company.

Manufacturing companies in Java have also not been able to explore the potential of employees related to customer capital to create value added for the company. The strategic policies have not been synergized, not led to market orientation and not prioritized consumer satisfaction. Therefore, companies still need to make substantial investments to focus on consumers so they can become market determinants. In customer capital, maintaining relationship with consumers, as well as knowing the best consumers and involving them in decision making, is important so the company can achieve what it has not achieved.

CP is the source of income for financial purposes. The competition to keep old customers and get new customers has become tighter making CP very important. The company determines and selects the customers and market segments to compete. In the perspective of the customer, a "value" given to the customer is seen from product attributes, good relationships with customers and brand image.

The company must determine which prospective customer segments the company should enter, so the benchmarks are clearer. Thus, the IC the employees have in creating value will provide a harmonious relationship with customers. However, the results of this study explain that IC does not affect CP. It is possible that manufacturing companies studied seem to pay little attention to IC as one of the main production factors compared to other production factors such as capital, technology and money. The company is not aware about the profits derived from IC, as activities are only seen from a business perspective. Leaders do not see the company as a unique unit of knowledge and skills, or a set of unique business assets that can differentiate products or services from its competitors.

CP affects FP. In customer perspective that shows CP, companies need to first determine the market segment and the target for the organization or business entity. Next, the manager must determine the best measuring instrument to measure the performance of each operating unit in an effort to achieve its financial targets. Furthermore, if a business unit wants to achieve superior FP in the long run, they must create and present a new product or service of better value to their customers (Kaplan and Norton, 1996). The product is said to be valuable if the benefits received by the product are higher than the cost (if the product performance is closer to or even more than what is expected and perceived by the customer). The company must satisfy the potential customer; it needs market segmentation to serve in the best way based on existing capabilities and resources. Good CP has an impact on FP.

4.2 The relationship of innovation strategies, intellectual capital, internal process performance and financial performance

Corporate IC and internal process performance do not mediate the relationship between innovation strategy (SIS) and FP. The innovation strategy influences the needs of IC of an ideal commitment. However, IC does not affect internal process performance. Manufacturing companies in Java have good internal process performance, although not supported by competent IC.

The role of IC in manufacturing companies in Java in the implementation of SIS is very important. The manufacturing companies in Java are currently experiencing booming requiring the role of qualified IC, but the results of this study find that empowerment of IC is still low. This certainly affects the performance of internal processes, as evidenced by the non-significant relationship between IC and internal process performance.

Human capital of manufacturing companies in Java has not been able to do value creation. The essence of human capital lies in the intelligence of employees. With their creativity, skills and intelligence, employees of manufacturing companies in Java seem to have not been able to do their best way, so the company feels that it does not get the best performance from its employees. With all the efforts given, employees in manufacturing companies have not been able to make their company different from other companies. Most manufacturing companies in Java do not have employees with ideal competencies; this results in employees neither being able to work with teams, nor to have their own ideas nor to plan according to the schedule.

Structural capital is the ability of an organization to fulfill the routine process and its structure that supports employees' efforts to produce optimal intellectual performance and overall business performance; for example, operational system, manufacturing process, organizational culture, management philosophy and all forms of intellectual property. In relation to structural capital, manufacturing companies in Java have not optimized the ability of employees, operational system, manufacturing process, organizational culture, management philosophy and all forms of intellectual property. Most manufacturing companies in Java do not have a clear operating system procedure, because the company does not have a database for relevant information. This has resulted in few ideas developed by the company.

Manufacturing companies in Java have also not been able to explore the potential of employees related to customer capital for the creation of corporate value. The strategic policies have not yet led to market orientation and to prioritize consumer satisfaction. Therefore, companies still need to make substantial investments to focus on consumers so they can become market determinants. Maintaining relationship with consumers, as well as knowing the best consumers and involving them in decision making, is important so the company can achieve what it has not achieved.

Good internal process performance affects FP as previously discussed. This is supported by Terziovski (2002) that innovation affects performance of internal processes, which subsequently affect CP and FP. Therefore, innovation in the strategy implementation will affect internal process performance because it will increase the productivity of the company, which in turn affects FP.

Operations management process is creating goods and services through the transformation of input into output. This activity is related to making immediate decisions in daily business by prioritizing the level of efficiency in the use of limited resources. The operative management process governs management, in the sense of continuous steering over every business process and supporting process. The results showed that 46 percent of respondents answered strongly agree, 47 percent of respondents answered agree and 7 percent of respondents took the neutral alternative to questions on operations management processes. This illustrates that manufacturing companies in Java have performed operational processes well.

Customer management process includes how the company gets customers, maintains customers and manages its brands. The results showed that 44 percent of respondents answered strongly agree, 47 percent of respondents answered agree and 75 percent of respondents took the neutral alternative to questions on customer management processes. This illustrates that manufacturing companies in Java have carried out customer management processes well.

The innovation process is part of the internal process performance, which is part of the strategy implementation. The results showed that 46 percent of respondents answered strongly agree, 46 percent of respondents answered agreed and 8 percent took the neutral

alternative to questions on innovation processes. This shows that manufacturing companies in Java have performed product and process innovation processes well.

Regulatory and social processes help organizations to continuously get the right to operate in communities and countries where goods are produced and sold. The company manages and reports on regulatory and social performance related to several important dimensions, such as environment, security and health, employee practices and community investment. The results showed that 50 percent of respondents answered strongly agree, 47 percent of respondents answered agree and 3 percent of respondents took the neutral alternative to questions on regulatory and social processes. This shows that manufacturing companies in Java have performed regulatory and social processes well. Therefore, IC and internal process performance do not mediate the relationship between SIS and FP.

4.3 The relationship of innovation strategies, internal process performance, customer performance and financial performance

Internal process performance and CP mediate the relationship between SIS and FP. As discussed above, manufacturing companies in Java always improve efficiency in their operational management processes, and their operational process is always customer oriented by innovating products and processes. Manufacturing companies in Java also pay close attention to the prevailing regulations and carry out social processes for the benefit of stakeholders. Internal process performance is related to the process of innovation, operation and after-sales service. The innovation process is related to the process of creating products and services in line with customer needs and increasing the use of technology in the effort to develop new products, while the operating process is related to efficient production processes and timely delivery to customers and after-sales service.

Good internal process performance will lead to better CP because it will increase market share, maintain the number of existing customers, increase the number of customers, increase customer satisfaction and improve CP because it will provide more value to customers. Terziovski (2002) provides evidence that innovation affects internal process performance, which subsequently affects CP and FP.

Innovation strategies affect FP if there is a good internal process performance. Furthermore, good internal process performance affects CP. Therefore, internal process performance and CP mediate the relationship between continuous innovation strategies (SIS) and FP.

4.4 The relationship of innovation strategies, management accounting information system, internal process performance, customer performance and financial performance

Management accounting information systems and internal process performance fully mediate the relationship between SIS and FP. The innovation strategy covering all aspects applied by the company will affect the need for reliable information. Bromwich (1990) argues that information in management accounting information systems can help companies face the challenges of a market full of competition. The management accounting information systems focus on increasing the company's value added to exceed its competitors and helping managers monitor performance in a competitive environment full of uncertainty. Information management accounting system is one of the management accounting products. Management accounting information systems predict the consequences that may occur on various alternatives carried out in various activities such as planning, controlling and decision making. Information available in the organization will be effective if they can take the right, accurate and comprehensive decision.

Suitability, accuracy and relevance between information and decision making will improve the quality of decisions taken and ultimately improve corporate performance (Gerloff *et al.*, 1991). The innovation strategies will determine the need for a management accounting information system, which has a broad scope, aggregation, timeliness and integration, for good internal process performance, which finally affects CP and FP.

Therefore, the management accounting information system, internal process performance and CP fully mediate the relationship between SIS and FP (Table I).

4.5 *Limitations of the study and implication*

The limitations of the study are that the IC analysis in this study is a combination of human capital, customer capital and structural capital. The study neither analyzes the elements of IC individually nor conducts an analysis on the relationship between indicators in IC. It assumes that IC consists of human capital, customer capital and structural capital that cannot be separated. The present study does not consider whether the manufacturing company has gone public or not. The manufacturing companies, based on the data from the Ministry of Industry and Trade in Java Province, have been grouped in medium and large companies; however, this study does not further identify the grouping and the results of this study cannot be generalized to all manufacturing companies in Indonesia, as the scope is limited to manufacturing companies in Java.

The theoretical implications in this study are to fill the theoretical gaps in I/O and RBT by integrating the contingency theory to it. In addition to that, this study is also intended to fill the gaps from previous research related to I/O and RBT by including contingency variables, namely IC, accounting information systems, internal process performance and CP. This is expected to provide an explanation of the causal relationship between innovation strategies, the role of IC, reliable management accounting information systems, company's internal process performance, CP and FP. In expanding the theoretical model, this study adds contextual variables in contingency theory which consist of the mediating variable of IC, management accounting information systems, company's internal process performance, as well as CP on the strategic relationship with FP. The practical implications in this research are expected to contribute ideas to all company management in East Java, especially manufacturing companies such as the importance of innovation in strategy implementation, management accounting information systems and IC in improving the company performance to deal with free trading industry.

5. Conclusion and suggestion

Based on the aforementioned explanation, the study has come to the following conclusions: an innovation strategy that includes product innovation, process innovation and technology has an impact on FP if there is a good internal process performance, reliable management accounting information system and good CP. The internal process performance, which includes operations management processes, customer management processes, innovation

No.	Hipotesis	Kepetusan
1.	*H1*: the innovation strategy influences the financial performance mediated by the company's intellectual capital and customer performance	Confirmed *H1*
2.	*H2*: the innovation strategy influences the financial performance mediated by the intellectual capital, internal process performance and customer performance	Rejected *H2*
3.	*H3*: the innovation strategy affects financial performance mediated by the company's intellectual capital and internal process performance	Rejected *H3*
4.	*H4*: the innovation strategy influences financial performance mediated by the company's internal process performance	Rejected *H4*
5.	*H5*: the innovation strategy influences financial performance mediated by internal process performance and customer performance	Confirmed *H5*
6.	*H6*: the innovation strategy influences the financial performance mediated by the management accounting information system	Confirmed *H6*
7.	*H7*: the innovation strategy influences the financial performance mediated by the management accounting information system and the internal process performance	Confirmed *H7*

Table I.
Summary of research hypotheses

processes and regulatory and social processes, optimizes the relationship of the strategy with FP. In this study, IC does not affect CP and internal process performance, nor does the management accounting information system affect FP. However, information systems affect FP through internal process performance and CP.

Suggestions for improvement of practices in the company are as follows. First, this study provides information to manufacturing companies in Java about the importance of combining financial and non-financial measures, as there is a cause and effect relationship between the two, by aligning the measures with the company's strategy. Second, IC in this study does not mediate the relationship between innovation strategies and CP. However, attention to IC is still indispensable given the long-term characteristics of a science-based economy with the application of knowledge management; the prosperity of a company will depend on a creation of transformation and capitalization of knowledge itself.

Suggestions for improvement of accounting education are as follows. First, this study contributes to increasing the academics awareness related to the improvement of the accounting curriculum. The findings are in the form of the latest management accounting information systems practices widely used by the business world. The practice of the management accounting information system should be included in the lecture material, for example in the form of a management accounting laboratory, so students get the latest knowledge related to management accounting information systems. Second, the results can be used as a basis for evaluating materials and curriculum by the management and IAI of educators. Third, the accounting materials must be updated in accordance with accounting practices to answer criticism from the public that accounting research only revolves around academics and the results are only for academics.

Suggestions for future research are as follows. First, the study does not differentiate respondents from manufacturing companies that go public and those that not, so further studies are encouraged to differentiate these two categories. Second, future studies should include not only the manufacturing companies on production process, but also those engaged in services. Third, the questions in the questionnaire do not explore inter-causal relationships between strategic objectives such as in the BSC concept, so it will be better if further research also explores the topic.

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PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20