Business strategy – MSMEs' performance relationship: innovation and accounting information system as mediators

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Abstract

Purpose – This study provides empirical evidences on the relationship between business strategy and micro, small and medium enterprises (MSMEs) performance. Additionally, the study aims to explore the role of innovation and accounting information systems (AISs) in the strategy performance linkage among MSMEs in Indonesia.

Design/methodology/approach – A questionnaire-based survey was conducted, which produced 102 valid responses. Surveys were distributed to MSME owners throughout Solo, Yogyakarta and Semarang, Indonesia. Data were analyzed by using structural equation model with partial least squares.

Findings – The result shows that business strategy has indirect impacts on MSMEs' performance. Both innovation and AIS positively mediate the relationship between business strategy and MSMEs' performance.

Research limitations/implications – The performance variable was measured based on the owners' perception. This makes the results not to be reflective of the real performance situation.

Practical implications – Alignment between strategy and innovation plays a vital role in improving the performance of MSMEs. The differentiation strategy that focuses on product uniqueness and quality requires innovation to add value to the product and the customer. The innovation process is at high risk of failure, so MSMEs owners need accurate calculations in decision making. AISs are part of management control to reduce risk by identifying standards and directing organizational goals.

Originality/value – This study considers the contingency factors in the relationship between strategy and performance by providing innovation variables and AIS.

Keywords Business strategy, Innovation, Accounting information system, MSMEs' performance

Paper type Research paper

Introduction

Majority of businesses in a developing country are micro, small and medium enterprises (MSMEs), and they play an important role as they can eradicate unemployment and increase gross domestic product (GDP) (OECD/ERIA, 2018). In Indonesia, the percentage of MSMEs reaches 99.99% for all business sectors (Bank Indonesia, 2015). Based on the ministry's data in 2016 of cooperatives and small and medium enterprises (SMEs), the contribution of MSMEs to national GDP was (521,360,523,965,465 USD) or 62.57% of GDP (industry bisnis.com, 2018). Furthermore, MSMEs contribute to export revenue by as much as 14.06% (521360523.97 USD) of the total of national export (Bank Indonesia, 2015). As the contribution

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of MSMEs is extensive across many sectors, researchers should guide small business owners to have good management practices to improve their work performances (Williams *et al.*, 2018).

The performance of MSMEs has become the main priority in all countries in the world as a result of global perspectives that acknowledge MSMEs as the economic growth engine in both developed and developing countries (Agwu, 2014; Naala *et al.*, 2017). Some studies confirm the report by Swamidass and Newell (1987), who asserted that company performance is influenced by business strategy and that companies with high work performance have clear strategies. Badri *et al.* (2000) also found out that different strategies can result in different company performances. Strategy development also plays a vital role in increasing the company's competitiveness (Singh *et al.*, 2010).

The difficult challenge faced by MSMEs in encountering global economic competition encourages researches on strategic management concepts and frameworks as the instruments for improving organizational performance. This need for MSMEs' contextual strategy development is caused by high levels of variation in sociocultural and environmental volatility (Bellamy *et al.*, 2019). This research on strategy has answered many questions on the importance, uniqueness and impacts of strategy on MSMEs' performance (Leitner and Güldenberg, 2010).

Organizations may choose a strategy to compete in wide markets or within a specific market segment. The consequence depends on whether an organization chooses to apply a low-cost strategy or a differentiation strategy (Leitner and Güldenberg, 2010). A strategy of leadership finance emphasizes on providing lower costs compared to competitors, while differentiation strategies focus on product and service creativities. Some companies view the product differentiation strategy as more suitable for them to have greater competitiveness compared to the finance leadership strategy (Aliqah, 2012). A tight competition at the globalized era demands that MSMEs should improve their competitiveness by providing added value to customers. The differentiation strategies give a wider scope for yielding a product with added value (Baines and Langfield-Smith, 2003). Some studies also illustrate that the differentiation strategy can increase leading competitiveness, and then later increase the company performance (Miller and Friesen, 1986; Slater *et al.*, 2006).

Besides the implemented strategy, substantial evidence also shows that an innovative process and an innovative product are the important things to determine a company's performance; in fact, innovative companies can conquer stagnant companies (Hoffman and Novak, 1998; Klomp and Van Leeuwen, 2001; Mansury and Love, 2008; Prajogo and Ahmed, 2006; Roper and Love, 2002). For an organization that develops its capacity to innovate continuously, such as implementing innovation as an important strategy component, it is necessary to provide new products, resources and structure collaboration, and process to solve problems creatively and to correlate innovation and the existing businesses (Bhaskaran, 2006). Innovation is the key to a sustainable business for MSMEs. MSME owners need to take business risks to be innovative for a better competitive advantage (Georgellis *et al.*, 2000).

Innovation done by MSMEs is quite different from the innovation done by big companies. Unlike a big company, MSMEs have constraints, such as their resource limitations, which can be the barriers to innovation. Moreover, great efforts required for innovation development do not guarantee the success of innovation, as the process risk of innovation is very high (Howell *et al.*, 2005; Wakasugi and Koyata, 1997). Therefore, the process of innovation in MSMEs must be done carefully. Management control systems (MCS) play an important role in dealing with environmental uncertainty in innovating MSMEs (Davila *et al.*, 2009). Accounting information systems (AISs) have become important as part of MCS because of their role in helping with the internal decision-making process and as a measurement tool for managers'

strategies in MSMEs (Blomkvist *et al.*, 2016). The AIS is considered important for building that capacity (King and Burgess, 2006).

Almost all companies compete in a dynamic environmental view that organizational innovation and AIS should be the basic capabilities owned by any company. However, many works of literature have not explored specifically the complex interaction between strategy, innovation, AIS and performance. Thus, a deeper exploration of how innovation, AIS and performance can affect management decisions positively in choosing many alternatives in uncertain and dynamic conditions is required.

This study will contribute to the existing literature on MSMEs. First, it enriches the literature on strategy, innovation, AIS and performances of MSMEs. Second, it is expected to be able to give an illustration of the importance of strategy, innovation and AIS, so that there can be an improvement in MSMEs' performance. Third, the findings of this study can be a consideration for policy-makers in empowering MSMEs through suitable strategies and innovation.

Many previous studies have become the foundation of this study and have been developed deeper. First, this study discusses the strategies used and innovations done by MSMEs that present great differences when compared to big companies. Secondly, this study considers the contingency factors in the relationship between strategy and performance by providing innovation variables and AISs. Third, this study is conducted in a developing country, Indonesia.

Review literature and hypothesis development

Accounting and MCS of innovative companies (MSMEs context)

Accounting information is often deemed less useful in decision-making in entrepreneurship literature due to its focus on the past, unlike innovation which pertains to the future. However, innovation researches on MSMEs recently prove that accounting information is very important for managers of innovative companies. Accounting information currently serves as part of management control, which is the central part of internal decision-making and managers' strategic measures in innovative companies (Blomkvist *et al.*, 2016).

The traditional view assumes that management control is designed to identify standardization and lead to the achievement of organizational objectives; thus, it eliminates innovation whose process is inefficient and at high risk of failure (Karmeni *et al.*, 2018). Management control redirects the company toward its designated objectives effectively. Therefore, such control is assumed to be a constraint on innovation, which is characterized by full of freedom, experiment and flexibility. Contrarily to the traditional view, the new paradigm of control recently highlighted the relevance of accounting and control in innovation and entrepreneurship (Davila *et al.*, 2009). The contemporary view believes that accounting may enhance innovation. Information may reduce uncertainty and facilitate dialogue between participants distributed in such innovation processes. Additionally, accounting information may become an instrument for mediating between internal and external parties in relation to expectations and deliverables (Feeney and Pierce, 2018).

An appropriate MCS design may minimize deviation (for example, unexpected occurrences); thus, it may bring an organization back to its designated objectives (Davila *et al.*, 2009). The findings in the MCS field suggest that innovation can enhance financial performance if accounting information is used in budgeting decisions during planning (Blomkvist *et al.*, 2016). Control plays a role in creating knowledge, and there is a positive relationship between creation of knowledge and innovation (Karmeni *et al.*, 2018). New emerging ideas produced during the planning phase may be anticipated before an organization steps into the next phase. Control takes place during further phases to reduce variation and deviation of the developed rules (Davila *et al.*, 2009).

Hypothesis development

Differentiation strategy–performance relationship

Small and startup companies' business sustainability is quite low, making strategic business development a critical factor in MSMEs' business sustainability (Lechner and Gudmundsson, 2014). One factor which inhibits MSMEs' sustainability, competitiveness and performance is lack of focus on coherent strategic orientation (Acquaah and Agyapong, 2015). Various competitive strategic classifications have been proposed by researchers, but the models developed by Miles and Snow (1986), Miles *et al.* (1978) and Porter (1980) attract more attention. Until now, the typologies of competition strategy developed by Porter (1980) and Miles and Snow (1986) are the most frequently quoted typologies that are tested by both big organizations and MSMEs (Parnell, 2013).

According to Porter (1980), a business may have superior performance to its competitors by developing a cost leadership strategy or differentiation strategy, and he claims that such strategy may be applied to all industries, organizational types and sizes (Parnell, 2013). The differentiation and low-cost strategies play an important role for MSMEs. Unfortunately, MSMEs find it difficult to apply the cost leadership strategy, since production efficiency becomes the main factor in this strategy (Leitner and Güldenberg, 2010). The cost leadership strategy needs substantial financial resources, which is a constraint to MSMEs. The differentiation strategy, which is based on speed, customer service and flexibility, becomes the best choice for MSMEs since it focuses more on an innovative approach, which is appropriate to MSMEs' characteristics (Lechner and Gudmundsson, 2014).

Some researchers have proven that cost leadership and differentiation strategies influence MSMEs' performance (Acquaah and Agyapong, 2015; Lechner and Gudmundsson, 2014). The research conducted by Leitner and Güldenberg (2010) states that MSMEs that do not apply any strategy have lower growth than MSMEs that apply either the low-cost strategy or the differentiation strategy. Meanwhile, qualitative research conducted by Linton and Kask (2017) concludes that the differentiation strategy may influence MSMEs' performance if used in combination with innovation and a proactive approach. This research's hypotheses are:

H1. There is a positive influence of strategy on performance.

Innovation–performance relationship

MSMEs are reactive, flexible and risky organizations, but they are more innovative than bigger companies (Ruiz-Palomo *et al.*, 2019). Innovation is always correlated with decision-making out of unexpected opportunities, exceptions, new relations and uncertainty of result, and it is at high risk of failure (Davila *et al.*, 2009). Besides serving as a factor to trigger competitive advantage, innovation also encourages enhancement of corporate performance, particularly MSMEs (Exposito and Sanchis-Llopis, 2018). MSMEs may also lead to value creation through innovation. Similarly, innovation in MSMEs offers competitive non-price medium, since innovation-based advantage has greater potential for sustainability than that of price-based advantage (Dabić *et al.*, 2018).

There is recently an increase of interest in research related to innovation in the context of MSMEs, which is motivated by MSMEs' central role in countries' economic development. The research conducted by Exposito and Sanchis-Llopis (2018) with SMEs in Spain concludes that innovation significantly influences SMEs' performance. Researches in different areas provide results different from those obtained by Corral de Zubielqui *et al.* (2019), Gronum *et al.* (2012) and Sok *et al.* (2013).

H2. There is a positive influence of innovation on performance.

Accounting information system–performance relationship

The objective of an AIS is to direct an organization to achieve its designated objectives (Davila *et al.*, 2009). Information and planning systems are useful for the management as instruments for the achievement of corporate objectives (Esparza-Aguilar *et al.*, 2016). AIS design is a method for enhancing organizational performance (Chenhall *et al.*, 2011; Soudani, 2012). An AIS is part of MCS which is highly important for corporate performance, since accounting information is used in the resource planning and resource allocation phases to analyze, measure and evaluate any alternatives in decision-making process (Davila and Foster, 2005; Esparza-Aguilar *et al.*, 2016). Manager's measure, which is based on accounting information, will influence corporate performance (Lucas, 1975). In addition, accounting information utilization may reduce asymmetry of information with creditors. Therefore, good accounting information quality may enhance the probability of obtaining funds from creditors, thus influencing corporate performance (Esparza-Aguilar *et al.*, 2016).

Some previous researches prove that accounting information and formal control influence performance. The research conducted by Lucas (1975) proposed a model of influence from the use of AISs, analysis on corporate performance. The research result implies that information systems provision should consider some matters for consideration during management decision-making. Grande *et al.*, (2011) conclude that the implementation, investment and correction of MSMEs information systems are correlated with their financial results. Meanwhile, Esparza-aguilar *et al.* (2016) prove that accounting and financial information utilization is positively correlated with performance through empirical results from MSMEs in Mexico. Thus, a hypothesis is developed as follows.

H3. Accounting information systems have a positive influence on performance.

The influence of strategy on performance through innovation

Innovation is defined as the adoption of ideas or behaviors related to the new practices implemented by an organization (Zaltman *et al.*, 1973). Innovation is correlated with organizational needs for greater competitiveness. During the recent free-trade era, the competition is getting tighter, and most organizations try to decrease the performance gap through innovation (Aghion *et al.*, 2005) and also to develop product differentiation strategy (Porter, 1985). Companies that implement product differentiation face the need to develop and change their products. With innovation, an organization can create unique products so that added value can be given to customers (Porter, 1985). Innovation is the key to an adaptive and manageable environment for a company (Cohen and Cyert, 1973), and innovative strategy often relates to organizational performance (Conant *et al.*, 1990; Hambrick, 1983; Robinson and Fornell, 1985). However, not all companies can respond to their environment in the same way (Garcia-Pont and Nohria, 2002). Some companies may react to the changes of an environment by making innovative strategies such as finding out new markets and new products, while others may apply the same strategy (Kumar and Kober, 2012).

A research done by Chenhall *et al.* (2011) to test the influence of strategy on innovation found out that a product differentiation strategy influences company performance. Even though there are differences in strategy types to adapt to the market changes, there is not any superior strategy that can increase the performance (Miles *et al.*, 1978). Next, Hambrick (1983) explained that differences in performance depend on the innovations done. The research conducted by Woodside *et al.* (1999) provided a view into the relationship between orientation strategy, innovation capability and performance. The researchers reported that orientation strategy differences between big companies and MSMEs can yield different performances. Thus, product differentiation strategy can lead to creative innovation on both product and process for improving performance.

H4. There is a positive relationship between strategy and performance through innovation.

The influence of strategy on performance through accounting information system

An AIS based on a computer can increase control and coordination in an organization (Nicolaou, 2000). Without the existence of information, it would be difficult for MSMEs to achieve greater performance, identify customers and supplier bills and forecast the future performance (Amidu and Abor, 2005; Ismail and King, 2005; Kharuddin *et al.*, 2010). The innovative activities equipped by accounting information can produce better information quality. Moreover, implementing strategy and innovation can also be a company control measure. Then, performance can be improved. Differentiation strategy, generally, needs a commitment to seriously practice research and development. This process certainly needs many funds. Much of the research and development with high creativity are mostly overloading. That causes lack of control over the money spent. Thus, it is very important to provide quick, precise and accurate financial information. Further, research and development activities can provide new products with the expected quality and specifications, and targeted funds.

Studies have been conducted about the harmonious relationship between business and IT strategies and their impacts on performance by some researchers (Bendoly and Jacobs, 2004; Sabegh and Motlagh, 2012; Sabherwal and Chan, 2001; Velcu, 2010). The researchers applied different profiles to explore the relationship between harmony and performance. Next, that research was retested by Pollard and Morales (2015) at MSMEs. Their findings supported that of Sabherwal and Chan (2001). They argued that harmony between business and information system strategy could not improve the company performance significantly. However, the researches were conducted only at big companies. Thus, there are still chances to do research on the relationship between business strategy and IT strategy on MSMEs' performance.

H5. There is a positive relationship between strategy and performance through accounting information system.

Method

Research respondents

This research was a survey research. In collecting the data, the questionnaires were distributed using both direct and online system (Google doc). The research respondents were MSME owners living at Yogyakarta, Solo and Semarang as these areas have become the MSME centers of creative industries in Central Java and D.I. Yogyakarta. There were 115 questionnaires that could be collected, but 13 questionnaires were dropped as they did not meet the criteria due to their different business models. The questionnaires that were finally used were 102. The chosen SEM requires 100 to 200 samples (Hair *et al.*, 1995).

Operational definition and variables measurement

This research is to test the influence of strategy on MSMEs' performance with the mediation of an AIS and MSMEs' performance innovation. The performance of MSMEs in this study is defined as the result of the company strategy implemented to achieve the target market and financial goals of an organization. The performance measurement has used the items developed by Khandwalla (1977) and validated by Miller (1987) and also implemented by some researchers such as Cragg *et al.* (2002) and Pollard and Morales (2015). The measurement covers long-run profitability, sales growth, resources (liquidity and investment capacity) and customer loyalty with 5-point Likert scale.

Strategy

Strategy in this study means the differentiation strategy. It can be explained further as the creation of products that are different from others and have added value for customers. This variable measurement was developed by Luo and Zhao (2004), Wolff and Pett (2006), Namiki (1988) and Camison and Villar-Lopez (2010).

Accounting information system

An AIS is a data-processing and financial transaction provided by users to make decisions. The measurement of accounting information uses the characteristics of accounting information, namely, reliability, relevance and timeliness, instruments developed by Marshall and Steinbart (2006), Sori (2016) and Sajady *et al.* (2008).

Innovation

Innovation is the adoption of a new idea or behavior in implementing new things in an organization. The innovation measurement uses the instruments developed by Capon *et al.* (1992) and Scott and Tiessen (1999). These items ask about new products that have been launched, product modifications over the last 3 years, how often a company enters new markets and how many products that have been planned for are being produced.

Data analysis technique and hypothesis test

The statistic method applied to test the hypothesis in this study was a SEM through PLS. This study measures two parts; they are (1) the influence of strategy on performance through innovation and AIS variables and (2) the direct influence of strategy, innovation and AISs on performance. The path analysis technique in this study used the program called Smart PLS 3.0. Then, the analysis stages applied PLS-SEM, with 5 steps, as follows: (1) having a model concept, (2) determining the algorithm analysis method, (3) determining the resampling method, (4) drawing the path diagram and (5) model evaluation (Ghozali, 2014).

Findings and discussion

MSMEs characteristics

The companies that are included as samples in this study are MSMEs manufactures. Besides, the samples have had an AIS, either computerized or are using a manual one. The characteristics of companies are illustrated in Table 1.

Description of sampling company characteristics

The respondent characteristics based on business types are classified into three categories that are food and beverages, fashion, and craft. These three businesses need high innovation to exist amidst the competition. The data from Table 1 show that the respondents are divided into three categories at a percentage of 36.3% for food and beverages, 30.4% for fashion and 33.3% for craft. In this case, the food and beverages category covers agricultural industries,

No	Business type	Total	Percentage (%)
1	Food	37	36.3
2	Fashion	31	30.4
3	Craft	34	33.3
Total		102	100

Table 1. Descriptive characteristics of sample companies

culinary and snacks. Next, the fashion category consists of batik and garments, while the craft business presents various categories.

Respondent demography characteristics

The respondents have various characteristics. They can be seen on Table 2.

The respondent's category based on the area is not spread evenly. Most of them are in Solo (66.66%) and in Semarang (4.9%). Based on the age category, most respondents are more than 50 years old (40.2%), while the least number of respondents (12.7%) are within the ages of 20–30. Further, the composition of respondents was balanced evenly between men and woman (42.2 and 57.8%, respectively). The educational background comprised mostly of bachelor's degrees (48%). There were also respondents who undertook a masters' program (2% of the respondents).

Description of variables

The four variables in this study comprise of strategy, innovation, AIS and performance. The four constructs are depicted by using average and index formula. The indexation is done to know the illustration of respondents' perception of the variables under study (Augusty, 2006).

The average scale is for knowing the tendency of respondent's answers or data centering. If the answer ranges from 1 up to 5, the median is 3. If the average answer of respondents is 4 or 5, the respond position is positive and high. However, if the average score is 1 or 2, the responsible position is negative and low. The scoring technique used to calculate the index was based on the following formula

$$\text{Index score} = ((\%F1 \times 1) + (\%F2 \times 2) + (\%F3 \times 3) + (\%F4 \times 4) + (\%F5 \times 5)/5) \quad (1)$$

Explanation. $F1$ is the frequency of respondents answering 1, $F2$ is the frequency of having 2 as the respondent answer and so on. $F5$ is for answering 5 from the score used at the list of

Table 2. Respondents' demographic characteristics

No	Respondents' demographic characteristics	Total	Percentage (%)
1	*Demographic area*		
	Yogyakarta	29	28.3
	Solo	68	66.66
	Semarang	5	4.9
2	*Age*		
	20–30	15	12.7
	30–40	33	14.7
	40–50	41	32.4
	>50	13	40.2
3	*Gender*		
	Male	43	42.2
	Female	59	57.8
4	*Education*		
	Junior high school	2	2
	Senior high school	31	2.9
	Vocational school	3	30.4
	Diploma 1	3	2.9
	Diploma 2	12	11.8
	Bachelor's degree	49	48
	Master's degree	2	2

questions. The answer ranges in answering the question dimension (closed question) of every variable are determined by the three-box method (Augusty, 2006). In this study, the answer range for score interpretation from the 102 respondents will start from the minimum ((102 × 1)/5) = 20.4 up to the maximum ((102 × 5)/5) = 102. In other words, the range is 102–20.4; then, it is divided by 3. Finally, it has the range of 27.2, which becomes the basis of index score interpretation; they are:

(1) Index score 20.4–47.6 = low interpretation

(2) Index score 47.7–74.9 = moderate interpretation

(3) Index score 75–102 = high interpretation

Strategy

The strategy in this study refers to differentiation strategy applied by a company. The strategy variables measured by nine question items are developed by Camison and Villar-Lopez (2010), Luo and Zhao (2004), Namiki (1988) and Wolff and Pett (2006). Based on confirmatory factor analysis (CFA), there are five item questions only that are valid, while the other four are dropped. The description of variables is statistically presented at Table 3.

The indexes are calculated by implementing the following formula (1):

The data on Table 3 present the average calculation and the index of respondents' questions, when measuring the strategy variables. The findings show that all questions from *D*1 up to *D*9 have an average score ranging from 2.92 up to 3.48, and the index is categorized as moderate.

Innovation

The innovation variable is measured by an instrument developed by Capon *et al.* (1992) and Scott and Tiessen (1999). The measurement of the innovation variable used 4 question items with a 5-point Likert scale. The CFA analysis results show that all the question items in innovation variables have good quality, so that they are valid to be used in data analysis. Table 4 presents the statistical description of the variables.

No	Question item	Min	Max	Mean	Index
*D*1	The company has shown innovation and creativity in the market	1	5	3.39	69.2
*D*2	The company focuses on providing customer satisfaction	1	5	3.48	71
*D*3	Companies build images to provide consistent service and products	1	5	3.42	69.8
*D*4	The company continuously designs differentiation based products	1	5	3.32	67.8
*D*5	Companies use different technologies for products	1	5	3.15	64.2
*D*6	The company continues to see product quality based on differentiation	1	5	3.36	68.6
*D*7	The company tries to innovate by introducing new products to the market	1	5	3.32	67.8
*D*8	The company provides a special budget for R&D	1	5	2.92	59.6
*D*9	The company creates new features as the market need	1	5	3.31	67.6

Table 3. Descriptive statistics strategy

No	Question item	Min	Max	Mean	Index
1	How often do companies create new products	1	5	3.37	68.8
2	How often do companies modify existing products	1	5	3.28	67
3	How often do companies enter new markets	1	5	3.06	62.4
4	How often do companies plan new products	1	5	3.27	66.8

Table 4. Descriptive statistics innovation

Based on the calculation of descriptive statistics, Table 4 depicts the average score and index of the items which are at a moderate category.

Accounting information system

Table 5 shows the descriptive statistics of accounting system variable. The average score and the index of respondents' responses on the questions on measuring the AISs variable are categorized as moderate.

Performance

The performance variable is measured by using 5 questions. It can be seen at the performance variable in Table 6.

Based on the data shown in Table 6, the average score on the performance variable is from 2.94 up to 3.09. The index of respondents' answers is from 60 to 63, and it can be categorized under the moderate category.

Hypothesis test

The analysis used in the study is PLS-SEM with Smart PLS 3.0. software. There are 2 sub-measurement models in the analysis, namely, the measurement model or outer model, and the structural model or inner model. PLS does not require a certain assumption of distribution to estimate the parameter so that a parametric technique is not necessarily used (Ghozali, 2014).

Table 5.
Descriptive statistics accounting information system

No	Question item	Min	Max	Mean	Index
1	The storage of a company's accounting information system contributes to the integrity of financial reporting	1	5	3.58	73
2	Data storage in a company's accounting information system provides detailed information that is accurate and reflects the actual company's assets	1	5	3.56	72.6
3	Data processing in accounting information systems companies can result in different decisions related to production results from the past, present, and future	1	5	3.56	72.6
4	Collecting data related to a company's accounting system can reduce the time and costs incurred	1	5	3.54	72.2
5	Data processing related to accounting information systems of companies can improve the quality of financial statements and facilitate the ease of the company's transaction process	1	5	3.56	72.6
6	Automation in collecting data in an accounting information system can speed up the preparation of financial statements	1	5	3.59	73.2
7	Automation in collecting data on the accounting information system of a company can mask human weaknesses	1	5	3.52	71.8

Table 6.
Descriptive statistics performance

No	Question item	Min	Max	Mean	Index
1	Profitability	1	5	3.02	61.6
2	Sales growth	1	5	3.05	62.2
3	Liquidity	1	5	3.09	63
4	Investment capacity	1	5	2.94	60
5	Customer loyalty	1	5	3.09	63

Measurement of model evaluation or outer model

This outer model is implemented to measure the validity and reliability of a model. The validity test is viewed by convergent and discriminant validity. To test the construct, the reliability in the SmartPLS 3.0 program, Cronbach's alpha and composite reliability are applied.

After analyzing the data, the results are presented in Table 7.

Based on data in Table 7, the results of the outer model test can be obtained. The loading factor greater than 0.70 means all the construct indicators are valid. Besides, based on the data written in Table 7, the AVE score yielded by all the constructs are above 0.50. Then, it can meet the convergent validity requirements. The Cronbach's alpha and composite reliability scores yielded by all the reflective constructs are very good, as they are above 0.70. It can, therefore, be concluded that the indicators are reliable.

Inner model evaluation

The inner model is evaluated by using the percentage of variance explained, which is by looking at the *R*-square score for endogenous latent variables. The result of *R*-square is illustrated in Table 8.

The *R*-square values of AIS, innovation and performance variables are 0.487, 0.368 and 0.357, respectively, and hence they are all in the low category.

Contruct	Indicators	Loading	Cronbach alpha	Composite reliability	AVE
Accounting information system	*S*1	0.928	0.950	0.963	0.867
	*S*3	0.908			
	*S*4	0.934			
	*S*7	0.953			
Innovation	*I*1	0.811	0.864	0.905	0.706
	*I*2	0.885			
	*I*3	0.824			
	*I*4	0.837			
Strategy	*D*1	0.909	0.938	0.950	0.792
	*D*4	0.904			
	*D*6	0.872			
	*D*7	0.910			
Performance	*P*1	0.854	0.877	0.911	0.719
	*P*2	0.898			
	*P*3	0.787			
	*P*5	0.848			

Note(s): AVE: average variance extracted

Table 7.
Reliability and validity constructs

	Original sample (*O*)	Sample mean (*M*)	Standard deviation (STDEV)	*T* statistics (|O/STDEV|)	*p*-values
Accounting information system	0.487	0.490	0.080	6.094	0.000
Innovation	0.368	0.378	0.080	4.586	0.000
Performance	0.357	0.390	0.101	3.522	0.000

Table 8.
Inner model *R*-square

Hypothesis test. The hypothesis test was done by looking at *T* statistically and the significance value on the coefficient path. The completed results are presented in Tables 9 and 10 as follows.

Results of the hypothesis test

The test for knowing the relationship of construct variables shows directly that the influence of strategy on performance has a *T* count of as much as 1.505 with the significance of 0.133. This means that the differentiation strategy does not directly influence performance. Based on Table 9 and see Figure 1, it can be seen that the test result of innovation and performance relationship statistically has *T* as many as 2.196 with the significance of 0.029. The second hypothesis, which is innovation influences performance positively, is accepted. The test for the third hypothesis that says there is a positive influence of the AIS on performance is also accepted, as the *T* statistically is 2.119 with a significance of 0.035.

The indirect influence of innovation and accounting information system as the mediating variables

The test results of the indirect influence of strategy on performance with the AIS as the mediating variable is presented in Table 10. This test obtains the value of *T* statistically as 2.068 with a significance level of 0.039. This shows that the alternative hypothesis, there is an indirect influence of the AIS on performance, is accepted. Further, the indirect influence of strategy on performance with innovation as the mediating variable statistically has a *T*-value

Hypothesis	Relationship	Original sample (*O*)	Sample mean (*M*)	Standard deviation	*T* statistic	*p*	Decision
H1	Strategy - > Performance	0.195	0.208	0.130	1.505	0.133	Rejected
H2	Innovation - > Performance	0.290	0.291	0.132	2.196	0.029*	Accepted
H3	Accounting information system - > Performance	0.224	0.221	0.106	2.119	0.035*	Accepted

Note(s): *Significant at 0.05 level

Table 9.
Hypothesis testing result (direct effect)

Hypothesis	Relationship	Original sample (*O*)	Sample mean (*M*)	Standard deviation	*T* statistic	*p*	*Decision*
H4	Strategy - > Innovation - > Performance	0.176	0.178	0.084	2.098	0.036*	Accepted
H5	Strategy - > Accounting information system - > Performance	0.156	0.154	0.076	2.068	0.039*	Accepted

Note(s): *Significant at 0.05 level

Table 10.
Hypothesis testing result (indirect effect)

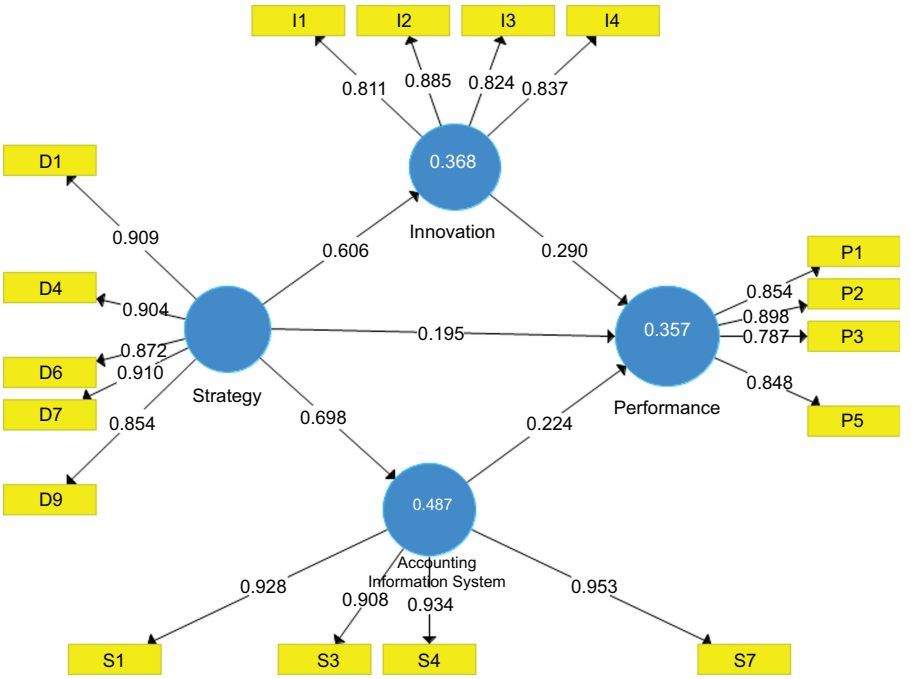

Figure 1.
CFA analysis

of 2.098 with a significance level of 0.036. This means that the alternative hypothesis that says there is an indirect influence of strategy performance through innovation variable is accepted.

Discussion

The influence of strategy to performance

The result of the hypothesis test shows that strategy does not influence performance directly. This means that the differentiation strategy implemented by MSMEs does not impact directly on improving performance. The previous studies on strategy and performance relationships also have various findings. However, the research on strategic management has failed in building a clear and consistent relationship between the diversification strategy and performance as most of the researches cannot be concluded, and the findings are contradictory (Davila *et al.*, 2009).

There has recently been a giant leap in business because of the development of technology and information. The tight competition pushes companies to create excellent and competitive products and services. Nowadays, companies tend to have unique and qualified products. According to Barney (1991), MSMEs can be said to be superior if they can create value and exploit their own resources well.

An AIS is very important for an organization because it can help the management staff in collecting the information, raw data and original data that can be changed into financial data for decision-making and controlling the organization (Dandago and Rufai, 2014; Harash, 2015; Harash *et al.*, 2014). Then AIS helps track transactions and provides internal and external reporting data, financial reports and trend analysis to improve control (Fagbemi *et al.*, 2016). The importance of AIS for MSMEs is that it can improve the

effectiveness in the decision-making process because it provides good and well-managed accounting information. The main goals of a business entity in adopting this system is to repair the efficiency of a business and to improve the competition in business (Hla and Teru, 2015).

The positive influence of innovation on performance

Based on the hypothesis test, there is a positive influence of innovation on performance. This means that the higher the innovation, the better the performance will be. The findings are in line with researches conducted by Anderson *et al.* (2014), Lee and Habte-giorgis (2004) and Wolff and Pett (2006). These researchers have found that there is a positive influence of innovation on MSMEs' performance.

The tight competition encourages the MSMEs to be innovative in order to portray excellence and competitiveness. Hence, the process of innovation development needs careful management to improve performance (Howell *et al.*, 2005; Wakasugi, 1997). Innovation on products, services and business models can give chances to MSMEs to survive and win the competition (Porter, 1980). Thus, MSMEs will gain profitability, such as through customer loyalty and price sensitivity, because the customers always consider the uniqueness and innovation of products (Lieberman and Montgomery, 1988).

The positive influence of accounting information system on performance

The results of data analysis show that there is a positive influence of AISs on performance. This means that the better the AIS, the better the company performance will be. That finding is in line with the researches conducted by Harash *et al.* (2014) and Esparza-Aguilar *et al.* (2016). They concluded that the implementation of AISs at MSMEs can influence the performance of those MSMEs in Iraq and Mexico. They said that AIS has important roles for MSMEs to improve performance (Lallo and Selamat, 2013; Sabegh and Motlagh, 2012).

To compete in the global arena, MSMEs should be responsive in facing environmental changes because of technology and information revolution. The adaptation to the fast environmental changes needs precision and accurateness for decision-making. The owners of MSMEs, which also have the positions of managers, are faced with many alternative choices that relate to efficiency, for example, the material choices, product design, market, distribution and services to customers. Therefore, an accurate calculation is required in every decision-making and action. Many MSMEs use AISs with the aim of collecting more information to help the owners make decisions. Finally, this leads to efficiency improvement, profitability and MSMEs' performance.

The positive influence of strategy on performance through innovation

The influence of strategy on performance with innovation as the intervening variable shows a positive and a significant relationship. Next, the influence of mediation also shows a significant effect at a 5% significance level. Thus, the indirect effect of the strategy variable on performance through innovation is accepted. This means that a good differentiation strategy will improve company performance. It will be higher if it is supported by high innovation. Differentiation strategy can be optimized if it is supported by innovation activities. Innovation focuses not only on product design but also on the innovation in other aspects, for example, service to customers, innovation in marketing the products, innovation to product distribution and innovation of after-sales service. Innovation, which is in line with this strategy, makes a company develop a uniqueness that can raise added value for customers. The global competition era requires companies to create added value for their

customers by creating a uniqueness that differentiates them from their competitors. The added value makes the customers indifferent if they are compared to their rivals. Finally, it can increase the profitability of companies.

The influence of strategy on performance through accounting information system

The test result of strategy influence on performance through AIS shows that there is a positive and significant relationship. Further, the differentiation strategy applied will improve the performance if it is supported by a good AIS. Then, it can be concluded that AISs have been successful in fully mediating the influence of strategy on performance. MSMEs may have some constraints such as finance, human resources and also technology, yet the differentiation strategy needs many funds, especially for conducting research and development (R&D). Meanwhile, the competitors may also offer a lower price. In this case, the owners of MSMEs should be careful in making decisions and engaging in various alternative actions. An AIS is responsible for analyzing and monitoring the financial condition of the company, preparing the documents needed for taxes and providing information to support the other organizational functions such as production, marketing, human resources management and strategic planning. Without the system, it is very hard for SMEs to determine the performance, identify the balance of customers' and suppliers' accounts and predict the future organizational performance (Amidu and Abor, 2005; Amidu *et al.*, 2011; Ismail and King, 2005; Kharuddin *et al.*, 2010).

Conclusion

This study aims at testing the roles of innovation and AIS variables in mediating the influence of business strategy on MSMEs' performance. The respondents are the owners of MSMEs in Yogyakarta, Solo and Semarang. Based on the PLS-SEM analysis, the conclusion is that strategy does not have a direct influence on performance; innovation has a positive effect on performance; AISs have a positive impact on performance; AISs mediate the effect of strategy on performance; and innovation fully mediates the effect of strategy on performance.

This study has some implications for the owners of MSMEs. The implications for the owners of MSMEs are as follows. First, differentiation strategies cannot produce significant results unless the owner encourages innovation. There should be an alignment between the strategy implemented and innovation to increase the performance of MSMEs. The differentiation strategy certainly emphasizes uniqueness and product quality and needs various innovations in product manufacturing. Although it requires high investments, the owners of MSMEs should promote innovation to provide added value to the customers. Secondly, significant investment in implementing the differentiation strategy with a high risk on the output of innovation encourages the managers to have accurate calculations in decision-making. Thus, MSMEs should implement AIS as a part of management control to identify standardization and lead to achieve organizational objectives; thus, it eliminates innovation of which process is inefficient and at high risk of failure.

Constraints and future research

This study has some constraints. First, the sample size in this study is relatively small, with 102 respondents consisting of MSMEs in three regions, namely, Semarang, Solo and Yogyakarta. This is due to the limited number of MSMEs that already have AISs and have received training in it. It is expected that future research can increase the number of samples by expanding the scope and area of study. Second, the proportion of respondents is not balanced on the demographic aspects, so it does not adequately describe the actual conditions in the three regions studied. The researcher recommends that future researchers pay more

attention to the equitable distribution of samples through proportional sampling techniques. Third, the performance variable has been measured based on the owners' perception. This results in the probability that the results do not reflect the real condition. Then, the measurement of MSMEs based on secondary data should also be implemented in future research.

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