IMPROVING COMPETITIVE ADVANTAGE OF SMALL AND MEDIUM ENTERPRISES THROUGH GREEN COMPETENCE AND GREEN IMAGE

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Abstract

Company, especially small and medium enterprises (SMEs), should seek to maximize the resources holistically and comprehensively concerning to environmental management to improve competitive advantage. SMEs which implement environmental management and green innovation will be able to improve their business productivity, reputation or image and respond to consumer demands on green products which is increasingly high. This study aims to identify and examine the correlation of green management with focus on green core competence, green innovation and green image performance in improving the competitive advantage of SMEs in Semarang. The sample of this study is 79 SMEs in Semarang consisting of textiles industries and products, chemical products, rubber and rubber products, leather and leather products. The sampling technique used is purposive sampling method based on the consideration that the SMEs have been in operation for at least five years and still exists today. The results show that that there is no significant and positive effect of green core competence on the green product innovation performance; there is a significant and positive effect of green core competence on the green process innovation performance; there is a significant and positive effect of green core competence on the green image; there is no significant and positive effect of green product innovation performance on the green image; there is no significant and positive effect of green process innovation performance on the green image; there is a significant and positive effect of the green image on the Competitive advantage. SMEs' competitive advantage in Semarang can be improved by increasing green core competence and green process innovation performance through the Green image.

Keywords: green core competence, green innovation performance, green image, green product innovation performance, green process innovation performance

INTRODUCTION

Companies that implement environmental management and green innovation will be able to enhance their business productivity, the reputation or image and respond to consumer demands on green products which is increasingly high as well as other related environmental issues. (Chen, 2008; Berry and Rondinelli, 1998; Chen et al., 2006; Porter and Van der Linde, 1995; Shrivastava, 1995). The concept of environmental management appears in several forms such as green management, green marketing, green production, green supply chain management and green innovation. Several previous studies indicate that good environmental management can improve corporate performance and competitive advantage (Chang, 2011; Chen et. Al, 2006; Noci and Verganti, 1999; Chen, 2008). Therefore, the company should strive to maximize its resources holistically and comprehensively, concerning to environmental management in order to improve competitive advantage. According to resource-based view, the success of the organization in achieving competitive advantage is derived from the characteristics of the organization itself which are formed from a variety of resources and capabilities possessed.

Organization resources consist of tangible and intangible. The resources manifested in the company can create competitive advantage (Barney, 1991; Mata, Fuerst, & Barney, 1995; Peteraf, 1993; Wernerfert, 1984). Resource-based view theory suggests that the practice of human resource management of the organization can make a significant contribution towards a sustainable competitive advantage by creating specific knowledge, skills and culture within the company which

are difficult to replicate (Afiouni 2007;. Barney, 1991; Mata et al, 1995). A variety of resources (skills and knowledge) or immobility of resources and sustainable competitive advantage can be created and maintained. Luthans et al. (2007); Perez and Garcia de Saa Falcon (2002) support organizations to develop and maintain the competitive advantage through the formulation of the human resources strategy that has a unique and high-value, specific, cumulative, difficult to replicate and replace.

Several studies have been conducted on the antecedent and driver factors to improve competitive advantage. Unfortunately, none of them, both holistically and empirically, tests several antecedent factors of competitive advantage through resource-based view and the green concept for products and processes (green innovation), especially on small and medium enterprises. The study on the importance of the intangible resources to create a competitive advantage has been carried out by Ayuni (2013) who tries to explore further the role of intellectual capital as a form of intangible resource of resource-based theory in response to the practice of environmental management to encourage green innovation both in terms of products (green innovation) and processes in order to achieve competitive advantage, in particular for small and medium enterprises through green human, structural and relational capital. The study concludes that green intellectual capital, corporate environmental ethics, has a significant effect on green innovation and competitive advantage.

This study aims to determine and test the effect of green core competence on the green product and process innovation performance; and the effect of green product and process innovation performance on the green image.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Green Core Competence

Resource-based view of the company is based on two main assumptions: resources diversity and immobility (Barney, 1991; Mata et al, 1995). Resource diversity refers to whether company has the resources or capabilities shared by the other companies or not. Resource immobility refers to a resource that is difficult to obtain by competitors because of the high cost for developing, acquiring and utilizing the resources. Both assumptions can be used to determine whether an organization is able to create a sustainable competitive advantage, by providing a framework to determine whether a process or technology provides a real edge on the market or not.

Core competence is a concept proposed by Prahalad & Hamel in 1990 which is defined as the company's collective knowledge about how to coordinate diverse production skills and technology of the company. This idea encourages managers to identify the types of competence of the company into two major groups, namely the core and non-core. Core competence is maintained as much as possible to be done by the company, while non-core competencies can be outsourced to other companies. The concept of core competence is crucial in determining the companies' strategy. At the center of tough competition and rapid changing in business environment, management activities can be focused on the core competencies which enable companies to produce unique products or services that are not easily replicated by competitors. The ability to be creative on core competence is extremely important to improve the performance and success of the company (Duysters and hagedoorn, 2000; Goddard, 1997).

The core competence is the main factor to formulate a strategy to improve the profitability of the company. Some researchers have linked the importance of core competencies to the company's competitive advantage (Petts, 1997; Hafeez et al., 2002). Srivastava (2005) argues that the core competence is the source of competitive advantage for all companies. Moreover, Chen, et al., (2007) defines the core competence as the ability to operate efficiently in the business environment as well as an attempt to respond to changes. Up to now, there is no study which explores the company's core competence related to green innovation or environmental management. Green core competence is the capability and collective learning about green innovation and environmental management in

organizations (Chen, 2007). The competitiveness of the corporate environment is derived from the green core competence and green core products. The indicators of green core competence (Chen, 2007) consist of environmental capability and technology or knowledge that is rare, difficult to replicate, to replace, and provide benefits to customers in the market. By using the concept of Prahalad and Hamel (1990), many studies conducted only focus on the core competencies of the company, not many of them are linked to the company's core competencies with green innovation and environmental management. Given the fact, this study tries to focus on the concept of core competence in environmental management by using green core competence as its variable. Pollution is a form of inefficiency on resource utilization (Porter and Van der Linde, 1995). Business resources productivity can be enhanced through green innovation to suppress the amount of environmental costs (Chen, et al., 2006).

Green Innovation

Green innovation according to Chen, et al., (2006) is a hardware and software of innovations related to green products and processes including technology innovation that includes energy saving, pollution prevention of green product design or environmental management companies. Green innovation performance is divided into the green product innovation performance and the green process performance. The green product performance is the performance product innovations related to environmental innovation, including product innovation with energy saving and pollution prevention (Chen, et al. 2006). Meanwhile, the green process innovation performance is a performance of innovation processes associated with energy saving and pollution prevention.

The indicator Green innovation performance is that the company:

1. chooses the product material produced that minimize pollution,
2. chooses the product material produced that minimizes energy and resources,
3. uses a small amount of material in the process of product development and design,
4. is very concerned about the product that is easy to recycle and reuse to innovate product design.

Meanwhile, the green process innovation performance indicator is:

1. The company's production process effectively reduces emissions or waste of hazardous substances,
2. The company's production process recycles possible emission or waste of hazardous substances,
3. The company's production process reduces water, electricity, coal, and oil use.

Talke et al., (2006) develops a competency based model to explain and stimulate innovation. Ritter and Gemunden (2003) states that the company requires the development of competencies to enhance the success of innovation and competence of the company which significantly influence the success of innovation. The recent studies have widely investigated the correlation between the company's core competence and innovation performance (Fairtlough, 1994; Francois et al., 2002, Ritter and Gemunden, 2003.2004; Talke et al., 2006). The study conducted by Chen (2007) concludes that there is significant effect of green core competence on the green product innovation performance and green process performance. Based on these studies, the hypotheses proposed are as the following:

H1: Green core competence affects the green product innovation performance

H2: Green core competence affects the green process innovation performance

Green Image

Chan (2000) states that the green image has a significant and positive effect on the effectiveness of advertising. The marketers must be reminded about of the importance of the green image. The environmental management of several countries have a positive effect on green image of those countries (Corrigan, 1996; Hu and Wall (2005). Porter and van der Linde (1995), Shrivastava (1995), and Berry and Rondinelli (1998) argue that the companies involved in corporate environmental management and green innovation actively not only can reduce waste production and increase productivity, but also can enhance its image, improve cost for green products, sell knowledge and environmental services, protection; develop new markets and ultimately gain competitive

advantage. Therefore, to deal with environmental management and green innovation has positive effect on the company's competitive advantage.

Companies dealing with environmental management and green innovation actively not only can minimize waste production and increase productivity, but also set a relatively high price for green products, improve the company's image, and make a positive impact on the company's competitive advantage under the tendency of consumer awareness and strict international regulations on environmental protection (Berry and Rondinelli, 1998; Chen et al, 2006;. Porter and vanderLinde, 1995; Shrivastava, 1995). Porter and van der Linde (1995), Shrivastava (1995), and Berry and Rondinelli (1998) argues that companies which give attention and investment in environmental management and green innovations whose purpose is not only to avoid legal problems concerning environmental protection, but also in order to improve their corporate image, production efficiency, and invade new environmental markets; will improve their competitive advantage.

Green innovation can realize the concept of environmental protection into the design and package products to enhance the company's excellence differentiation (Chen et al 2006 ;. Hart 1995). Resource investment in environmental management will not only avoid problems or punishment on the protection of the environment, but also enhance the company's production, efficiency, develop new environmental markets, as well as increase the company's ability to green innovation (Chen 2008a). Companies that do a lot of investment in environmental management will be able to improve their corporate images. Therefore, the environmental management positively affects the green image.

Porter (1980) and Barney (1991) defines the competitive advantage of the company as a condition in which competitors cannot imitate competitive strategy run by a company. Some previous studies find that there is a correlation between green innovation and competitiveness on the electronic and information industry in Taiwan (Chenetal, 2006). Green innovation can improve product value and equalize the investment costs of environment. Finally, green innovations can improve resource productivity and company performance. (Porter and van der Linde 1995).

Based on the results of previous studies, the hypotheses can be formulated as follows:

H3: Green core competence affects the green image
H4: green product innovation performance affects green image
H5: green process innovation performance affects green image
H6: green image affects the competitive advantage

RESEARCH METHODS

The number of samples in this study are 79 SMEs with purposive sampling by consideration that the SMEs have already been operating for at least five years in Semarang city; they are in the form of textiles industry and products; chemical products; rubber and rubber products; leather and leather products. Methods of data collection is done by using a questionnaire. The measurement of green core competence variable is measured by four indicators, they are green product innovation performance with 4 indicators, green process innovation with 3 indicators, green image with 3 indicators and competitive advantage with 4 indicators. All of indicators is measured by Likert scale of 1-5 form strongly disagree to strongly agree.

FINDINGS AND DISCUSSION

The validity test is used to measure whether the questionnaire is valid or not. A questionnaire is considered to be valid if it can express something which will be measured by the questionnaire. (Ghozali, 2005) the validity test with *Smart* PLS Program is conducted by using the size of convergent validity. Based on the result of cross loading factor test, the value of convergent validity from each indicator is generally > 0.5 where the value of 0.5 on the initial research has been considered as high value and if the further study produces the value of each indicator of > 0.7 (Ghozali, 2006). Based on the result of validity test which has been conducted, it is known that three indicators of green core

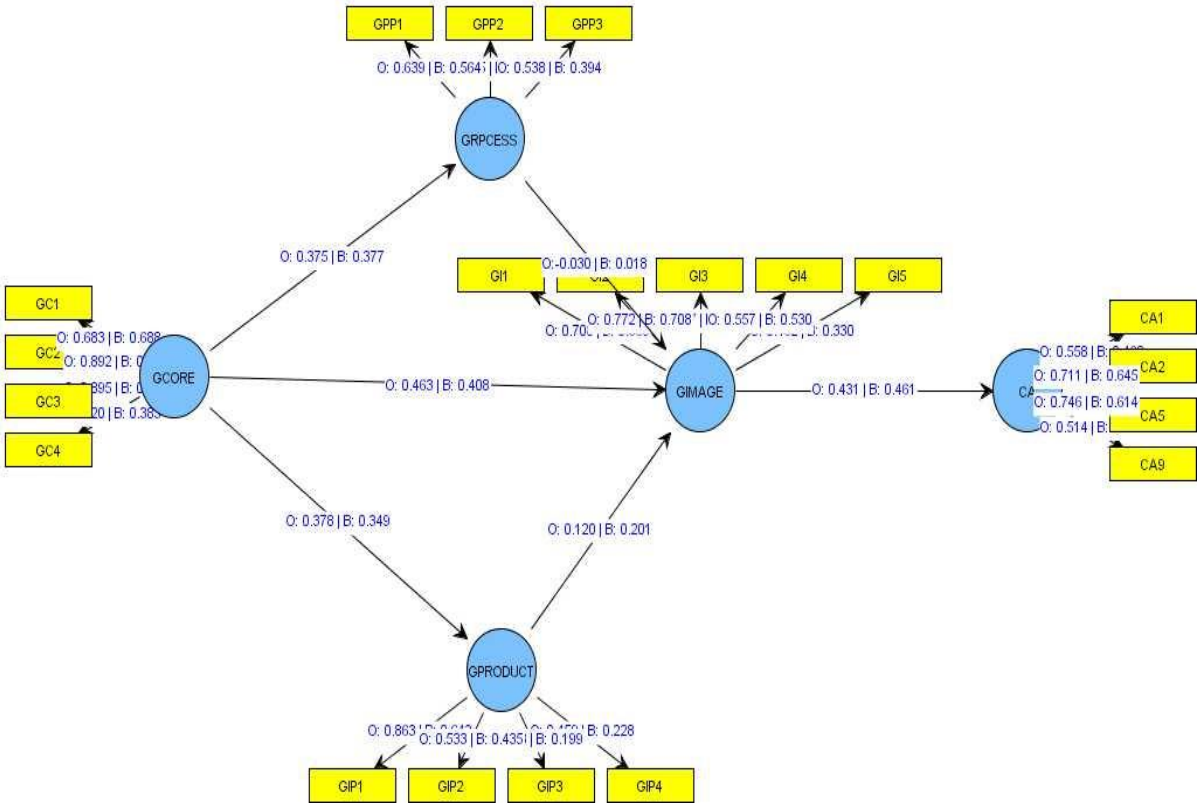
competence variable have the value of original sample estimate of more than 0.7 and the value of T statistic is higher than T table (1.67) and it is only one which is not valid namely GC4 indicator because it has T statistic which is lower than T table (1.67). Three indicators of green product innovation performance variable have the value of original sample estimate of less than 0.7 and the value of T statistic is lower than T table (1.67) which means that the indicators are not valid, and it has only one valid indicator namely GIP1 because its T statistic is lower than T table (1.67). Two indicators of green process innovation performance variable have the value of original sample estimate of more than 0.7 and T statistic is higher than T table (1.67) which means that all indicators are valid, and it has only one indicator which is not valid namely GPP3 GIP1 because the value of T statistic is lower than T table (1.67). Four indicators of green image variable have the value of original sample estimate higher than 0.7 and the T statistic is higher than T table (1.67) which means that all indicators are valid, while one indicator namely GI5 is not valid. Three indicators of competitive advantage variable have the value of original sample estimate higher than 0.7 and T statistic is higher than T table (1.67) which means that all indicators are valid, while the CA 9 indicator is not valid.

Reliability Test

The measurement of reliability is conducted by using Composite Reliability, which means if the value of composite reliability among constructs with their indicators resulted good enough value which is higher than 0.70. Where according to Chin by Ghozali (2006) when the result of loading factor is 0.70 or higher, it is considered as good. The result of reliability test shows that the value of Composite Reliability for green core competence is 0.826, green product innovation performance is 0.635, green process innovation performance is 0.695, green image is 0.793 and competitive advantage is 0.730. Those values refer to the opinion of Chin. Therefore, the result of composite reliability of each construct is good and can be used in the process of analysis to show wether or not it has correlation with each construct, because the obtained result has value of > 0.70. from the result above, all variables have the composite reliability value of > 0.7 which means that the reliability value is good and can be used for the process of further study. The term reliability in this study refers to the indicators used in this study are real based on the factual object of this study.

The Result of Inner Model

The data analysis result by using *Smart* PLS software shows that the output result of structural model of loading factor construct which will explain the correlation among constructs are described as in the figure below.



FULL MODEL OF PLS STUDY

The effect of green core competence on green product innovation performance results the original sample estimate value of 0.378, $T_{statistic}$ Value of 1.295< t_{table} 1.677, so that the hypothesis I is not supported, which means that there is no positive and significant effect of green core competence on green product innovation performance. This result is not in line with the study which is conducted by Fairtlough,1994; Francois et al., 2002, Ritter and Gemunden,2003,2004; Talke et al., 2006 and the study by Chen (2007). SMEs which has comptence and capability of managing environment which is unique, difficult to be imitated by competitors, unchangable, and gives advantage to customers tends to be able to improve green product innovation performance.

The effect of green core competence on green process innovation performance results *original sample estimate* value of 0.375, $T_{statistic}$ Value of 1.788 > t_{table} 1.677, so that the hypothesis II is not supported, which means that there is positive and significant effect of green core competence on green process innovation performance. This result is in line with the study conducted by Fairtlough,1994; Francois et al., 2002, Ritter and Gemunden,2003,2004; Talke et al., 2006 and the study conducted by Chen (2007). SMEs which has comptence and capability of managing environment which is unique, difficult to be imitated by competitors, unchangable, and gives advantage to customers tends to be able to improve green process innovation performance.

The effect of green core competence on green image results original sample estimate value of 0.463, $T_{statistic}$ Value of 2,756 > t_{table} 1.677, so that the hypothesis III is not supported, which means that there is positive and significant effect of green core competence on green image. This result is also in line with the study conducted by Corrigan, (1996); Hu and Wall (2005). Porter and van der Linde (1995), Shrivastava (1995), Berry and Rondinelli (1998). SMES which has comptence and

capability of managing environment which is unique, difficult to be imitated by competitors, unchangable, and gives advantage to customers tends to be able to improve green image.

The effect of green product innovation performance on green image results original sample estimate value of 0.120, $T_{statistic}$ Value of 0.564 < t_{table} 1.677, so that the hypothesis IV is not supported, which means that there is no positive and significant effect of green product innovation performance on green image. This result is not in line with the study which was conducted by Corrigan, (1996); Hu and Wall (2005). Porter and van der Linde (1995), Shrivastava (1995), and Berry and Rondinelli (1998).

The effect of green process innovation performance on green image results original sample estimate value of -0.030, $T_{statistic}$ value is 0.106 < t_{table} 1.677, so that the hypothesis V is not supported, which means that there is positive and significant effect of green process innovation performance on green image. This result is not in line with the study conducted by Corrigan, (1996); Hu and Wall (2005). Porter and van der Linde (1995), Shrivastava (1995), and Berry and Rondinelli (1998).

The effect of green image on competitive advantage results original sample estimate value of 0.431, $T_{statisti}$ Value of 3.309 > t_{table} 1.677, so that the hypothesis VI is not supported, which means that there is positive and significant effect of green image on Competitive advantage. This result is also in line with the study conducted by Corrigan, (1996); Hu and Wall (2005). Porter and van der Linde (1995), Shrivastava (1995), and Berry and Rondinelli (1998). SMEs which has comptence and capability of managing environment which is unique, difficult to be imitated by competitors, unchangable, and gives advantage to customers tends to be able to improve green image.

The original sample estimate results 0.255. The value proves that Green Relational Capital has effect on Competitive Advantage. This means that the better Green Relational Capital is, the better the Competitive Advantage will be. The same is true with the hypothesis test which can be proved from the result of data analysis which results $t_{statistic}$ value of 2.214 > t_{table} of 1.677, so that the alternative hypothesis which states that Green Relational Capital has effect on Competitive Advantage is supported.

The original sample estimate results 0.928 and has positive value. This value proves that Corporate Environmental Ethic has positive effect on green innovation, therefore the test on the hypothesis IV which states that Corporate Environmental Ethic has effect on green innovation can be proved from the result of data analysis which resulted $t_{statistic}$ value of 63.628 > t_{table} of 1.677.

The test on the hypothesis V results original sample estimate value of 0.158 and it has positive value. The value proves that the higher the value is, the higher the corporate environmental ethic is, the higher competitive advantage will be. The result of the data analysis obtains $t_{statistic}$ value of 2.403 > t_{table} of 1.677, so that the alternative hypothesis which states that Corporate Environmental Ethic has effect on competitive advantage is supported.

The test on the hypothesis VI result original sample estimate value of 0.097 and it has positive value. This value proves that the higher the value is, the higher the Green Innovation is, the higher the competitive advantage will be. The result of data analysis obtains $t_{statistic}$ value of 1.916 > t_{table} of 1.677, so that the alternative hypothesis which states that Corporate Environmental Ethic which has effect on competitive advantage is supported. This result is in line with the previous study which claimed that the correlation between green innovation and competitive advantage has positive effect on information and electronic industry in Taiwan (Chenetal,2006). The green innovation can increase product value and thus it finally can compensate the investation cost for environment. It also increase the productivity of human resouces and improve the performance of companies(Porter and van der Linde 1995). This result of this study is also in line with the study conducted by Chen (2006) and Hart (1995).

CONCLUSION

Based on the findings, the competitive advantage of SMEs in Semarang can be improved through improving core competence and green process innovation performance through Green image. The ability of the companies to manage their human resources for environmental purpose is very important, because those who are able to operate by considering environmental aspect tend to improve their performance which in the end can lead to sustainable competitive advantage.

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