

THE EFFECT OF GREEN INNOVATION ON INNOVATION PERFORMANCE AND COMPETITIVE ADVANTAGE : THE MEDIATION ROLE OF MANAGERIAL ENVIRONMENTAL CONCERN (CASE STUDY OF BATIK SMEs IN PEKALONGAN)

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Abstract

The purpose of this study is to find out about green innovation which is divided into green product innovation and green process innovation on innovation performance and competitive advantage, as well as knowing the managerial environmental concern relationship as a mediation in the relationship between green innovation and innovation performance and competitive advantage. This study uses a sampling method in the form of non-probability sampling with as much purposive sampling of 32 respondents. The analytical method used is SEM (Structural Equation Modeling) with the PLS (Partial Least Square) approach. The results of the analysis state that there is no influence between green product innovation and green process innovation and innovation performance, between green process innovation and competitive advantage, between innovation performance and competitive advantage. There is a positive influence between green product innovation on competitive advantage. In addition, managerial environmental concerns mediate the relationship between green product innovation and green process innovation and innovation performance, managerial environmental concerns do not mediate the relationship between green product innovation and green process innovation with competitive advantage.

Keywords : Green innovation, Green product innovation, Green process innovation, Innovation Performance, Competitive Advantage, Managerial Environmental Concern, Innovation, Batik Pekalongan.

INTRODUCTION

The influence of globalization in today's industrial world has caused competition between companies to become increasingly fierce and competitive. Companies must innovate to be able to compete to create a product that is superior to competitors (Trott, 2005). However, many companies are only concerned with product innovation to meet consumer needs and generate profits without regard to the impact of production activities on the environment. With the increasing level of environmental damage caused by companies, now companies are required to start embracing the idea of sustainable development which refers to development that can meet the needs of the current generation while preserving the environment so that the needs of future

generations can be met (Siahaan, 2004). Green innovation can be a solution for companies to continue to carry out production and innovation activities while maintaining environmental sustainability. (Sezen and Çankaya, 2013) According to Chen, Lai, and Wen (2006), green innovation is a set of innovations related to products, including innovations in technology that can create energy savings, pollution prevention, waste recycling, environmentally friendly product designs, or corporate environmental management.

Green innovation is not only beneficial for environmental sustainability but can affect innovation performance and create a competitive advantage with management involvement in high environmental awareness. So that with the green innovation strategy, companies have

the opportunity to create products with added value and be able to meet the needs of today's consumers. This added value will be a competitive advantage possessed by the company from the existence of green innovation. However, the green innovation strategy requires the role of managers so that it can be implemented in every component of the company's strategy. According to Ar (2012), support from the organization including managers is an important issue for the success of the green innovation strategy, values.

Green innovation is not only needed by large-scale companies but also by medium and small-scale companies or MSMEs. As is well known, MSMEs create various opportunities, such as employment for various workforces, and provide skills development opportunities for workers, thus contributing to a country's economic growth. However, SMEs often have a low level of awareness about green innovation. MSMEs often do not pay attention to environmental sustainability such as the disposal of waste and garbage that is not recycled, thus increasing pollution and contamination, as well as inefficient use of raw materials (Shashwat, 2019). The application of a green innovation strategy to MSMEs has several advantages that are not only good for the environment, but also increase competitiveness and business profits.

One of the superior products produced by SMEs in Pekalongan is Batik. To improve quality and be able to compete in the market, Pekalongan batik craftsmen must be able to increase high creativity and maintain traditional motifs and be able to meet market demands. This is a challenge to continue to increase innovation in order to increase competitive advantage. However, the disposal of batik waste that has not been managed properly in Pekalongan The disposal of batik waste that has not been managed properly District, has resulted in river pollution which has a negative impact on public health.

LITERATURE REVIEW

Legitimacy Theory

Legitimacy Theory ensures that the company's operational activities operate by the norms prevailing in society so that it is accepted by outsiders (legitimized). Legitimacy pressure will be faced by companies if their operational activities are not in line with the rules in society. Ghazali and Chariri (2007) state that companies use economic resources and places to operate that make companies have a social contractual relationship with the community. This relationship makes the company responsible in every business process to the community so that the company in its operational activities must comply with the rules and norms that exist in society.

Green Innovation

According to Chen et.al (2012) green innovation improvement of energy-efficient products or processes, preventing pollution, waste recycling, green product design, and corporate environmental management in the field of environmental management. Green innovation is divided into two, namely green product innovation and green process innovation. Green product innovation is an innovation in products that takes into account environmental impacts (such as using environmentally friendly materials, green design, minimizing the use of useless goods, and using products that can be recycled) to increase company competition (Chen et al., 2006). Indicators in green product innovation (Ar, 2012), namely: 1) Use of environmentally friendly raw materials, 2) Environmentally friendly packaging, 3) Products that are easy or can be recycled.

Green process innovation is a new way of paying attention to the impact on the environment in every manufacturing process (Meeus and Edquist, 2006). Indicators in green process innovation (Chen, Lai, and Wen, 2006) are 1) Manufacturing processes that reduce the use of emissions and waste. 2) Manufacturing processes that recycle waste, 3)

Manufacturing processes that reduce the consumption of water, coal, oil, and electricity, 4) Manufacturing processes that reduce the use of raw materials.

Innovation Performance

Woodman (2014) reveals that innovation performance is a Performance measured from three dimensions, which include product innovation, process innovation, and managerial innovation, which have implications for improving quality and efficiency. There are five measurements in innovation performance, namely: 1) Future focus, 2) Market impact, 3) Capabilities and Image, 4) Process, 5) Sustainability and overall.

Competitive advantage

Michael Porter (1985) in Awwad (2013) states that competitive advantage disability is acquired through the characteristics and resources of a company to have a higher performance than other companies in the same industry or market. Porter & Canada (1985) argues that three generic strategies can be carried out by companies in creating competitive advantage, namely: 1) Difficulties for consumers in obtaining substitute goods from competitors. 2) The existence of new products on the market is not a threat to the company. 3) The company's products have a long life cycle or don't wear out quickly

Managerial Environmental Concern

Managerial environmental concern is the level of a manager's concern for the impact of human activities on the environment. Support from companies is an important issue for achieving successful product and service innovation (Ar, 2012). Support from companies for implementing environmental awareness is a key factor in achieving green innovation success. Managerial environmental concern indicators (Ar, 2012) are 1) Awareness of carrying out green innovation, 2) Awareness that green innovation is an important component of strategy, 3) Awareness that green innovation has benefits for both companies and the environment, 4)

Awareness that green innovation is an effective strategy.

ConnectionGreen Innovation Performance

The existence of various environmental damages that are detrimental to society makes consumers' awareness about the environment increase, this changes consumer tastes to choose products that are friendly to the environment and environmentally sustainable. This will provide opportunities for MSMEs to implement green innovation by creating products and processes that are environmentally friendly and following the consumer's perspective (Shashwat, 2019). The green innovation strategy that is included in various company strategies can provide benefits for companies such as creating products that suit consumer desires and using fewer resources. From this explanation, a hypothesis can be drawn:

H1: Green product innovation has a positive effect on innovation performance.

H2: Green process innovation has a positive effect on innovation performance.

ConnectionGreenInnovationto competitive advantage

Competitive advantage is something that must be possessed by companies, competitive advantage shows the company's position from existing competition (Chen et al., 2006). Green innovation can provide a competitive advantage to companies by creating products that have advantages and added value to consumers, these product advantages reflect a company's differentiation strategy, namely by providing value or uniqueness expected by consumers (Porter & Canada, 1985). Green innovation also provides opportunities for companies to have a competitive advantage in costs. With a green innovation strategy, it will reduce the input and use of recycled materials so that costs are lower. (Shashwat, 2019). From this description, the following hypothesis can be drawn:

H3: Green product innovation has a positive effect on competitive advantage.

H4: Green process innovation has a positive effect on competitive advantage.

Connection Innovation Performanceto competitive advantage

The existence of a green innovation strategy will increase innovation performance through the efficient use of raw materials, and help companies to find and develop capabilities in producing a product to meet consumer perspectives such as products at lower costs, meeting consumer needs for environmentally friendly products, and meet future challenges that can create competitive advantage (Ar, 2012). From this explanation, a hypothesis can be drawn:

H5: Innovation performance has a positive effect on competitive advantage.

Managerial environmental concern mediation

Managers can provide motivation and policies within the company to become a strategy for carrying out green innovation (Ar, 2012). Managers who have higher environmental concerns will provide better green innovation performance than managers who have less concern for the environment. From this description, the following hypothesis can be drawn:

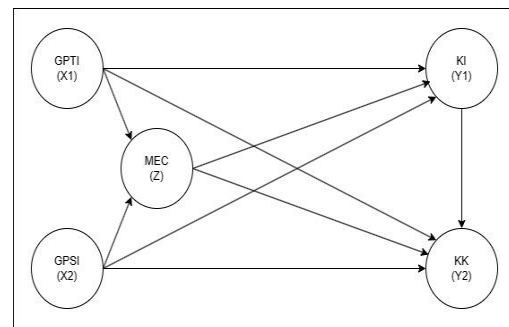
H6: Managerial environmental concern mediates the relationship between green product innovation and innovation performance.

H7: Managerial environmental concern mediates the relationship between green process innovation and innovation performance.

H8: Managerial environmental concern mediates the relationship between green product innovation and competitive advantage.

H9: Managerial environmental concern mediates the relationship between green process innovation and competitive advantage.

Picture 1 : Conceptual Framework



RESEARCH METHODS

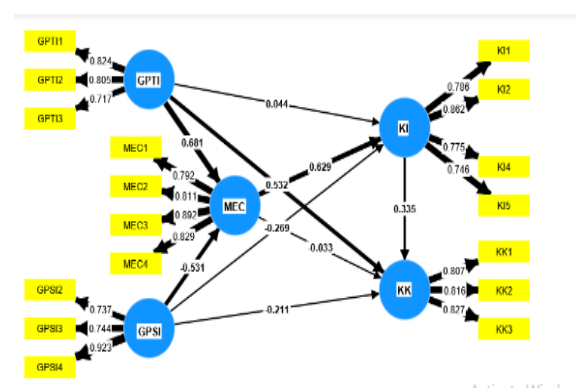
This type of research is associative research. the researcher uses primary data, by obtaining data directly from first-hand through observation by distributing questionnaires.

The sampling technique used in this study was a non-probability sampling technique using a purposive technique of 32 samples. In this study, researchers considered location factors, namely batik SMEs located in the Regency and City of Pekalongan Technique data analysis in this study used quantitative using Structural Equation Modeling (SEM).

RESEARCH RESULTS AND ANALYSIS

Evaluation of Measurement Models

a. Convergent Validity



Picture 2 : SEM – PLS Modeling Diagram

The SEM-PLS modeling diagram in Figure 2 shows the loading factor values for all indicators. The loading factor value of this study is more than 0.7. This shows that the data of all indicators in the constructed variable can be said to be valid, so the

testing in this study can be continued with test average *Variance Extracted* (AVE).

**Table 1 : Value Average Variance Extracted (AVE)
Variables on the questionnaire**

No	Variable	AVE	Information
1	GPTI (X1)	0.614	Valid
2	GPSI (X2)	0.650	Valid
3	KI (Y1)	0.630	Valid
4	KK (Y2)	0.667	Valid
5	MEC(Z)	0.692	Valid

Source: Processed data

Table 1 shows the AVE value for all indicators > 0.5. Based on the AVE value, all variables can be said to be valid and each indicator can explain well the variables contained in the research.

b. Reliability Test

Table 2 Value of composite reliability and Cronbach's Alpha

No Variable	cronbach's alpha	Composite Reliability	Criteria
1 GPTI (X1)	0.701	0.826	Reliabel
2 GPSI (X2)	0.784	1.155	Reliabel
3 KI (Y1)	0.811	0.871	Reliabel
4 KK (Y2)	0.752	0.857	Reliabel
5 MEC(Z)	0.859	0.900	Reliabel

Source: Processed data

The reliability test in Table 2 shows that all indicators each have a composite reliability value and Cronbach's alpha which has a value of > 0.70. From these five values, it can be concluded that the existing questionnaires are reliable, have good and appropriate internal consistency, and are ideal,

Structural Model Evaluation

Results *bootstrapping* this study is shown in Table 3.

Table 3. Bootstrapping Results – Path Coefficient

Variable	t-statistics	P-Values	Information
GPTI→KI	0.218	0.218	Not significant
GPSI→KI	1,413	0.158	Not significant
GPTI→KK	2,434	0.015	Significant
GPSI→KK	0.985	0.325	Not significant
KI→KK	1,390	0.165	Not significant
GPTI→MEC→KI	2,492	0.013	Significant
GPSI→MEC→KI	2,310	0.021	Significant
GPTI→MEC→KK	0.121	0.904	Not significant
GPSI→MEC→KK	0.120	0.905	Not significant

Source: Processed data

DISCUSSION

The Effect of Green Product Innovation on Innovation Performance

The hypothesis test proves that Green Product Innovation has no significant effect on Innovation Performance. This can be proven from the results of the t-test calculation for X1, the value is 0.218 with a probability value of 0.828 > 0.05, so it can be concluded that there is no significant effect. This means that Green Product Innovation does not affect the Pekalongan Batik SMES Innovation Performance.

The Effect of Green Process Innovation on Innovation Performance

The hypothesis test proves that Green Process Innovation has no significant effect on Innovation Performance. This can be proven from the results of the t-test calculation for X2, the value is 1,413 with a probability value of 0.158 > 0.05, so it can be concluded that there is no significant effect. This means that the Green Process Innovation does not affect the Pekalongan Batik SMES Innovation Performance.

This case, if green process innovation does not have an impact on innovation performance, of course, the use of production processes with environmentally friendly technology has not been able to support increasing company profits. Of course, companies must also look at other factors to support green process innovation so that the profits generated will also be higher. The results of this study show results

that are by research conducted by Nurulia, et al. (2020).

The Effect of Green Product Innovation on Competitive Advantage

The hypothesis test proves that Green Product Innovation has a positive and significant effect on Competitive Advantage. This can be proven from the results of the t-test calculation for X1, a value of 2,455 is obtained with a probability value of $0.015 < 0.05$, then it can be stated that there is a positive influence between Green Product Innovation on Competitive Advantage.

This study proves that the influence of green concept product innovation can increase the company's competitive advantage. The results of this study are supported by previous research conducted by Zameer et al., (2020), showing that green product innovation plays a significant and positive role in green competitive advantage.

The Effect of Green Process Innovation on Competitive Advantage

The hypothesis test proves that Green Process Innovation has no significant effect on competitive advantage. This can be proven from the results of the t-test calculation for X2, the value is 0.985 with a probability value of $0.325 > 0.05$, so it can be concluded that there is no significant effect. This means that Green process innovation needs to be increased by recycling the finished product. The results of this study show results that are by the research conducted by Bernadeta, et al (2022)

Effect of Innovation Performance on Competitive Advantage

The hypothesis test proves that Innovation Performance has no significant effect on Competitive Advantage. This can be proven from the results of the t-test calculation for Y1, the value is 1,390 with a probability value of $0.165 > 0.05$, so it can be concluded that there is no significant effect. This means that Innovation Performance does not affect the

Competitive Advantage of Batik Pekalongan SMES. The results of this study show results that are by conducted by Intan Sherlin (2016).

The Effect of Green Product Innovation on Innovation Performance through Managerial Environmental Concern

Based on the results of the managerial environmental concern mediation test between green product innovation and innovation performance with a probability value of $0.013 > 0.05$, it proves that Managerial Environmental Concern mediates Green Product Innovation with Innovation Performance and supports the hypothesis (H6) in this study. The factor of a manager's concern for the environment greatly influences the green innovation strategy. Company awareness regarding environmental protection is important in the process of meeting customer needs.

Support from companies to carry out environmental awareness is a key factor in achieving green innovation success. The results of this study show results that are by the research conducted by Nada Erinta (2020)

The Influence of Green Process Innovation on Innovation Performance through Managerial Environmental Concern

The mediation test conducted in this study also resulted in the statement that managerial environmental concern mediates the relationship between green process innovation and innovation performance with a probability value of $0.021 > 0.05$, thus proving that Managerial Environmental Concern mediates Green Process Innovation with Innovation Performance and supports the hypothesis (H7) in this study.

With full support from the manager regarding environmental concern, the application of green innovation will run optimally so that it will produce good innovation performance. The results of this study show results that are by the research conducted by Nada Erinta (2020)

The Influence of Green Product Innovation on Competitive Advantage through Managerial Environmental Concern

The mediation test carried out in this study obtained results with a probability value of $0.094 < 0.05$, thus proving that Managerial Environmental Concern does not mediate Green Process Innovation with Competitive Advantage. The results of this study are in line with research conducted by Ilker Murat Ar (2012) that the relationship between green product innovation and competitive advantage is not affected by the level of manager's concern for the environment.

The Influence of Green Process Innovation on Competitive Advantage through Managerial Environmental Concern

The mediation test carried out in this study obtained results with a probability value of $0.095 < 0.05$, thus proving that Managerial Environmental Concern does not mediate Green Process Innovation with Competitive Advantage. This study shows evidence that managerial Environmental Concern does not mediate the relationship between Green Innovation and the Competitive Advantage of Batik MSMEs in Pekalongan.

CONCLUSION

Based on the research results, it can be concluded as follows:

1. There is no effect of Green Product Innovation on the Pekalongan Batik SMES Innovation Performance
2. There is no effect of Green Process Innovation on the Pekalongan Batik SMES Innovation Performance
3. There is a positive and significant influence of Green product innovation on the competitive advantage of Pekalongan Batik SMEs
4. There is no effect of Green Process Innovation on the Competitive Advantage of Batik Pekalongan SMES
5. There is no effect of Green Process Innovation on the Competitive Advantage of Batik Pekalongan SMES
6. Managerial Environmental Concern mediates the relationship between Green Product Innovation and Pekalongan Batik SMES innovation performance
7. Managerial Environmental Concern mediates the relationship between Green Process Innovation and Pekalongan Batik SMES innovation performance
8. Managerial Environmental Concern does not mediate the relationship between Green Product Innovation and the Pekalongan Batik SMES Competitive Advantage
9. Managerial Environmental Concern does not mediate the relationship between Green Process Innovation and the Pekalongan Batik SMES Competitive Advantage

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