Jurnal Pendidikan Akuntansi dan Keuangan

Journal homepage: https://ejournal.upi.edu/index.php/JPAK

The Role of Green innovation in Competitive Advantage Mediated by Innovation Performance in MSMEs in Sumenep Regency

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A B S T R A C T

Main Objective The purpose of this study is to see the impact between green innovation and innovation performance variables on competitive advantage directly and the indirect influence between green innovation on competitive advantage through innovation performance. Method This study uses a quantitative model and uses Part Least Square analysis with a sample of 100 MSME respondents. Main Findings from the research results, it was found that there is a direct influence between green innovation and innovation performance variables on competitive advantage and there is an indirect influence between green innovation on competitive advantage through innovation performance. Theory and Practical Implications The results of the study can provide research development from green innovation, and provide an overview of the factors that have an impact on competitive advantage. Novelty The novelty of this research shows the influence between green innovation on innovation performance that no one has previously researched, as well as the use of research models to examine MSMEs.

A R T I C L E   I N F O

1. INTRODUCTION

In business competition, every business is expected to have a differentiator from other businesses so that it can dominate market share. So that business owners are increasingly required to be able to adapt and keep up with the times to be able to survive and even develop their business. Currently, what is being intensified in every country is environmental awareness as part of environmental conservation so that every activity generated from every business does not pollute the surrounding environment. So that one of the solutions that can be done by business owners can innovate by making changes to the processes and products produced on an environmental basis. Business owners need innovation so that they can compete in making a product that is superior to competitors (Li et al., 2019). Related to this, MSME owners are starting to improve to carry out an Innovation Performance in their business by implementing green innovation. green innovation itself can be a solution for MSMEs to carry out innovation activities in each process while maintaining environmental sustainability. By using a green innovation strategy in carrying out sustainable development in the MSME business, it is hoped that it can change the mindset of MSME owners who will be able to explore and support environmental conservation programmes, so that in every production process, from start to finish, they will pay attention to the waste that will be disposed of so as not to pollute the environment (Song et al., 2020).

Green innovation can have an impact on Innovation Performance and can create a competitive advantage by involving all elements in the business sector to have a high concern for the environment (Zameer et al., 2022). Based on data from the Central Bureau of Statistics, the number of MSMEs spread across various regions in Indonesia reached a total of 64 million in September 2020 (coverage 6 of 2020), with the distribution of the largest number of MSMEs in Indonesia in East Java Province, which is around 9 million MSME actors, while the number of MSMEs in Sumenep District is 313,351 (Economic Census 2019) as quoted on the page https://diskopukm.jatimprov.go.id. In Sumenep District, micro, small and medium enterprises (MSMEs) are increasing because many of the residents there after migrating from other areas return to their villages to open their own businesses from the capital they get, besides that the increase in the number of MSMEs is also supported by the programme from the Sumenep District Cooperative and MSME Office (Micro, Small and Medium Enterprises) which continues to intensify several programmes to improve micro businesses.

One of the Sumenep district's favourite souvenirs is traditional cakes and batik. Waste generated from the baking process includes coconut shells, copra, grated coconut, coconut water, eggshells and coconut wash. Copra has good nutritional content with 5.78% protein, 38.24% fat, 15.07% fibre. Coconut water contains protein, lipids, some carbohydrates, minerals and contains various free amino acids. The nutritional composition of coconut fruit depends on the age of the coconut fruit. Coconut shell contains 36.51% lignin, 33.61% cellulose and 29.27% semi-cellulose. Egg shells contain 95% calcium carbonate and 0.3% phosphorus (9). From the above problems, the researcher wants to conduct research on the role of green innovation in competitive advantage mediated by innovation performance in MSMEs in Sumenep Regency.

State of the art or novelty in this study is the conduct of research on green innovation and Innovation Performance in overcoming the problems of business competition experienced by MSMEs in Sumenep Regency, where previously there has been no research using these variables in research related to MSMEs in Sumenep Regency.

The purpose of this study is to determine the relationship between green innovation variables to Competitive Advantage, as well as the relationship between green innovation

variables to Innovation Performance, and also the relationship of green innovation to Competitive Advantage through Innovation Performance.

2. METHODS

Research Model

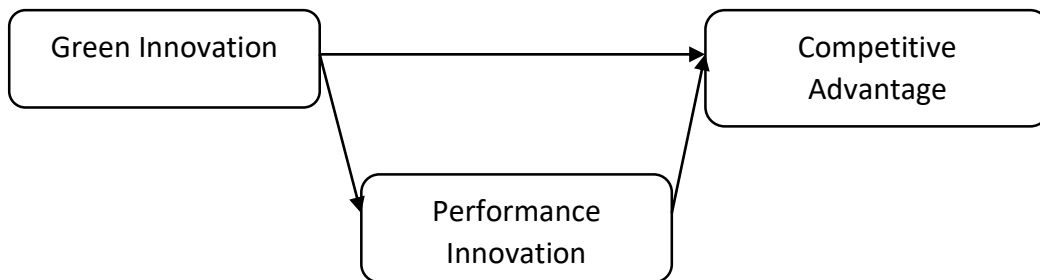The research model in this study is divided into two hypotheses, namely:

Figure 1. Research Framework

Hypotheses

H1: There is an impact between green innovation on Competitive Advantage

H2: There is an impact between green innovation on Innovation Performance

H3: There is an impact between green innovation on Competitive Advantage through Innovation Performance

Type of Research

This research approach uses quantitative methods, namely research based on the philosophy of positivism, used in subjects based on populations or samples, collecting data with questionnaires distributed to respondents, and quantitative data analysis, with the aim of testing the hypothesis proposed. (Priadana & Sunarsi, 2021).

Data and Data Sources

Primary data sources, namely by distributing questionnaires and conducting interviews with respondent MSME owners to complete the required data. Secondary data sources, namely by searching for literature documents such as journals and books that are in accordance with the problems in the object.

Population and Sample

The population used in this study were MSMEs located in Sumenep Regency totalling 313,351 MSMEs.The research sample used in this study used the Slovin formula because the population was already known, for the sample calculation as follows:

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

$$n = \frac{313.351}{1+(313.351)(0{,}05)^2}$$

n = 100

So the sample in this study used at least 100 MSMEs in Sumenep Regency as the sample. And in sampling using purposive sampling method, where MSMEs which are the criteria for this study are MSMEs that have implemented green innovation in their production (Hidayat, 2021).

The variables used in this study are:

Green innovation variable (X)

Is an innovation tool related to the development of a process or product, including technological innovations that can result in savings in unused materials, reduce pollution, and the application of recycling production waste as goods that can be used, designing environmentally friendly based products (Chang et al., 2019). Indicators:

1. Using natural raw materials
2. Natural product packaging
3. Production processes that minimise waste and emissions
4. Production process by recycling production waste

Innovation Performance Variable (Z)

Is the ability to spread innovation throughout production (Omazić & Miljenović, 2023). Indicators:

1. Market impact
2. Capability and image
3. Production process
4. Sustainability and overall effectiveness

Competitive Advantage Variable (Y)

How MSMEs utilise their advantages to compete with competitors and achieve business goals (Wibisono, 2019). Indicators:

1. The difficulty of consumers in finding substitute products from competitors
2. The presence of new products in the market is not a threat to the company. The company's products have a long life or do not wear out quickly

Data Analysis Technique

Data analysis used in this study using SmartPLS software assistance. The stages that must be processed in Partial Least Square (PLS) (Gio, 2022) are as follows:

Designing a Structural Model (Inner Model)

In the structural model, latent variables are divided into two, namely exogenous and endogenous variables.

Designing a measurement model (Outer Model)

The measurement model, commonly known as the extrinsic model, connects all indicator variables to their latent variables. The external model also known as (external relationship or measurement model) defines how each indicator block relates to its latent variable.

Goodness of Fit Evaluation

Testing the goodness of fit of the structural model on the inner model uses the R-square (R²) value. If the R2 value is greater than 0.7, it is categorised as strong.

3. RESULTS AND DISCUSSION

Measurement Model Analysis (Outer Model)

Tabel 1. Validity Test

Variable	Item	Loading Factor	AVE	Result
Green Innovation	X.1	0.832	0.747	Valid
	X.2	0.897		
	X.3	0.806		
	X.4	0.769		
Innovation Performance	Z.1	0.891	0.589	Valid
	Z.2	0.895		
	Z.3	0.800		
	Z.4	0.868		
Competitive Advantage	Y.1	0.836	0.724	Valid
	Y.2	0.872		
	Y.5	0.845		

Source: Data processed, 2023

In testing the validity of table 1, it shows that the items used in the variables of family work conflict, work flexibility and job satisfaction have a loading factor value greater than 0.70. Furthermore, it can be seen in the AVE value which shows that it is above 0.50. So it can be concluded that all items used in this study are valid. Furthermore, reliability testing is carried out which in detail can be seen in table 2 which shows that each variable has a Cronbachs alpha and Composite Reliability value greater than 0.70. So it can be concluded that in this study reliable items have been used.

Tabel 2. Reliability Test

Variabel	Cronbachs Alpha	Composite Reliability	Result
Green Innovation	0.845	0.896	Reliabel
Innovation Performance	0.887	0.922	Reliabel
Competitive Advantage	0.810	0.887	Reliabel

Source: Data processed, 2023

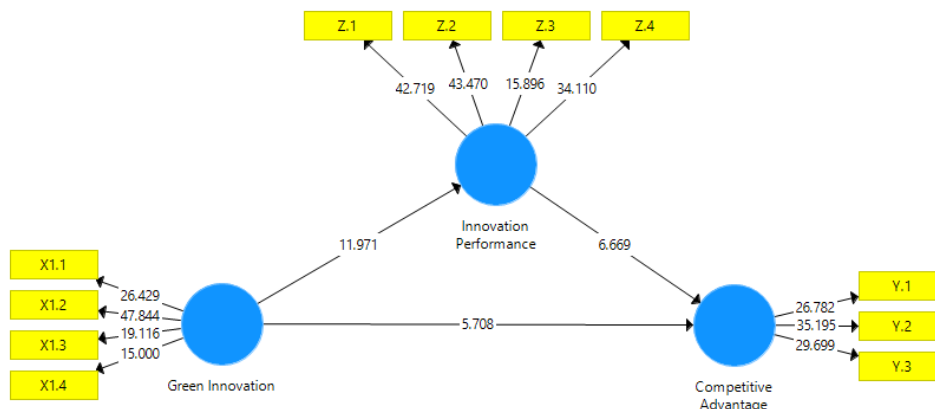Structural Model Analysis (Inner Model)

Figure 1. Structural equation modeling results
Source: Smartpls research output, 2023

Tabel 3. Direct Effect

	Direct Effect	Sample Mean	T-Statistic	P-Value	Result
H₁	Green Innovation ➜ Competitive Advantage	0.410	5.708	0.000	Accepted
H₂	Green Innovation ➜ Innovation Performance	0.714	11.971	0.000	Accepted
H₃	Innovation Performance ➜ Competitive Advantage	0.492	6.669	0.000	Accepted

Source: Data processed, 2023

Table 3 above explains in detail that the first hypothesis in this study is the effect of green innovation on Competitive Advantage has a t-statistic value of 5.708 with a p-value <0.05, with a positive sign on the coefficient value which means that if green innovation increases, Competitive Advantage will be higher. Furthermore, the second hypothesis of the effect of green innovation on Innovation Performance shows a t-statistic value of 11.971 with a p-value <0.05. With a positive sign on the coefficient value, it can be interpreted that the better green innovation, the higher Innovation Performance. Finally, Innovation Performance on competitive advantage has a statistical t-value of 6.669 with a p-value <0.05. With a positive sign on the coefficient value, it means that the better the Innovation Performance, the higher the competitive advantage. Because the three hypotheses have a t-statistic value greater than 1.96 and a p-value smaller than 0.05, it can be concluded that the first to third hypotheses are accepted. Furthermore, the mediation test can be seen in table 4 below.

Tabel 4. Indirect Effect

Hypothesis	Mediation
Indirect Effect (T-Statistic)	Innovation Performance
Green Innovation and Competitive Advantage	5.953

Source: Data processed, 2023

Table 4 above shows that the t statistic of 5.953 is greater than 1.96. This illustrates that the Innovation Performance variable is able to mediate the influence between green innovation on the company's competitive advantage. This means that with good Innovation Performance, competitive advantage will increase if the company has good green innovation.

Evaluasi *Goodness of Fit*

Tabel 5. R-Square

	R Square	R Square Adjusted
Competitive Advantage	0,698	0,691
Innovation Performance	0,510	0,505

It can be seen in table 5 above that there is an R-Square value for the competitive advantage variable and innovation performance of 0.698 and 0.510. This figure illustrates that the green innovation variable has a contribution in explaining the innovation performance variable by 51% while the other 49% is explained by other variables outside the model used. Furthermore, green innovation and innovation performance variables are able to explain the competitive advantage variable by 69.8% while the remaining 30.2% is explained by other variables outside the model used.

4. CONCLUSION

From the results of research carried out in the field by distributing questionnaires to each owner of MSMEs in Sumenep Regency, the results show that there is an impact of the direct relationship between green innovation on innovation performance, it can be said that with changes towards improvement, innovation is needed, so that these changes can run according to the wishes of the owner. As well as the existence of a direct relationship between green innovation and competitive advantage with this relationship, indirectly an MSME can pay attention to the environment starting from the production process and packaging, then it will be an advantage of the MSME. And there is also an indirect relationship between green innovation and competitive advantage through innovation performance, owners have a desire to keep up with market developments such as paying attention to the environment, therefore they must start making changes to an innovative production process that does not produce waste that can pollute the environment and environmentally friendly packaging so that later it can become part of the competitive advantage of these MSMEs.

From the results of research on green innovation on innovation performance so far, there have not been any results from research on these two variables, let alone applied to MSMEs. Usually, green innovation and innovation performance are used to examine a large company. Based on research (Singh et al., 2020) shows that green innovation has an impact on environmental performance and also the results of further research show that green innovation has an impact on competitive advantage, the results of this study are in line with research from (Qiu et al., 2020).

5. ACKNOWLEDGEMENT

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