The Impact of Green Organization Capabilities on MSME Competitive Advantage: Mediating Role of Green Innovation

Yanah Yanah[1] and Bambang Tjahjadi[2*]
[1] Student of Department Accounting, Airlangga University, Surabaya, East Java, Indonesia
[2] Senior Lecturer of Airlangga University, Surabaya, East Java, Indonesia

yanah-2023@feb.unair.ac.id; bambang.tjahjadi@feb.unair.ac.id*

Abstract. The increasing environmental pollution caused by MSME waste, such as tofu, tempeh, rattan, and other factories, has raised concerns and an urgent need for sustainable practices. This research aims to build a new framework for Environment-Friendly Organization Capabilities for MSMEs and to address the research gap in the relationship between the capacity of environmentally friendly organizations and Competitive Advantage while exploring the mediating effects of Green Innovation. The novelty of this study explains the innovations made by MSMEs in utilizing waste from MSME production to become more economically valuable. Research methods using Structural Equation Modeling (SEM), with sample of 339 respondents. The results of the study show that green organization capabilities have a direct influence on competitive advantage and indirect effect through green innovation. The conclusion from the results of this study is that if MSMEs want to increase their competitive advantage, they must be able to carry out green organization capabilities and green innovation. MSMEs must choose raw materials that do not pollute the environment and are environmentally friendly, and waste from MSMEs is collected somewhere, and then special incineration is made. The ashes are made for a mixture of paving blocks, while for the disposal of tofu and tempeh factory waste is disposed of in places far from residential areas so as not to disturb the health of the surrounding community.

Keywords: Environmentally Friendly Organization Capabilities; competitive advantage; green innovation; MSMEs.

1 Introduction

1.1 Research Background

Organizational capabilities are important assets that businesses can use to gain a competitive edge. These skills include the dexterity and inventiveness required to adjust to changing surroundings in addition to the proficiency to flourish in regular tasks. Environmental concerns are now a top concern for businesses worldwide, which emphasizes the need to investigate the idea of "green organizational capabilities," which combines organizational objectives with environmental ones. To accomplish this, the idea of "green innovation" has surfaced, which helps businesses maintain and enhance their

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environmental practices. Businesses are starting to understand that innovation requires environmental concerns in addition to resource optimization. Considering these advancements, a thorough examination of the notion of "green organizational capability" is imperative. There is still a significant knowledge gap regarding the emerging concept of green organizational capability and its effect on competitive advantage through green innovation, despite studies examining the value of green innovation and organizational capabilities in providing competitive advantage for businesses, especially for companies.

The author offers a theoretical framework to fill this gap. For example: MSMEs in Kertasari, Cirebon Regency choose environmentally safe materials to produce products, such as in making tempeh, natural soybean raw materials are used, and banana leaves are used to wrap tempeh so that it tastes better and is safer than using plastic. Other MSME owners, such as furniture in Sindang Jawa, Cirebon Regency, rattan in Plumbon, Cirebon regency, and convection MSMES in Trusmi and Tegalgubung, Cirebon Regency, do not throw away the rest of the raw materials but use them to make accessories and other by products that have a selling value. The rest of the unused waste is then collected in a crematorium that has been provided; to be burned and after that it is used as a mixture of materials to make paving blocks.

Based on the theory of a resource based view, the company must exert all re-sources to achieve competitive advantage (Awan et al., 2023; Bhandari et al., 2022; Duvaud et al., 2021; Gianni et al., 2022) so that the ability of green organizations is very important for companies, including small scale businesses such as MSMEs because it reflects an organization's ability to carry out environmentally friendly and cost effective corporate governance to achieve competitive ad-vantage, and will be more optimal if supported by green innovation where the company is able to do environmentally friendly innovations that will increase competitive advantages for the organization. It presents three new indicators centered on the capabilities of green organizations, namely competitive advantage, green innovation, and green organizational capabilities.

The field of organizational capability research has evolved significantly and gained increased attention in recent decades. Professionals from all over the world have dealt with the idea of the capacity of an organization and its constituents from various angles. Knowledge management capabilities are an important component of organizational capabilities in the shift to a knowledge-based economy. Organizational capabilities such as meta-competencies resulting from group knowledge and the application of knowledge within business. Organizational ability emphasizes efficient division of labor to maximize the potential of human resources. Organizational capabilities are divided into two categories: basic functional activities and innovation-oriented activities. This activity controls how well inputs are converted into outputs, which determines the company's competitive position. Using the Collins framework as a guide, numerous studies have examined the components of organizational capabilities and their relationship to green innovation, financial performance, and competitive advantage in specific countries and sectors.

Operational capabilities are among the unique components of organizational capabilities. These capabilities are crucial for obtaining a competitive edge through effective resource utilization and material flow. While creativity enables businesses to explore

and take advantage of market opportunities for innovation, dynamic capabilities are linked to the innovation process towards sustainable development. While the impact of environmental pollution on business activities has been considered when examining some aspects of an organization's capabilities, like eco-friendly dynamic capacity and eco-creativity, a thorough examination of the components of an organization's capabilities has not been carried out. The primary driving force behind this study's execution was the identification of a research gap that needs to be filled to fully explain the crucial connection between business performance, green organizational capabilities, and green innovation.

In an ever-evolving business landscape, companies are looking for ways to gain a competitive advantage. The research framework offers in-depth information on how to do this by leveraging the key components of green organizational capabilities and green innovation. Therefore, the purpose of this study is to provide businesses with in-depth advice on how to strengthen their competitive position in the contemporary business environment. Collis' perspective on organizational capabilities has gained widespread acceptance and application amidst different viewpoints. Collis stated that organizational capabilities are divided into two categories: basic functional activities and innovation-oriented activities (Collis J David, 1994). This activity controls how well inputs are converted into outputs, which determines the market position of different companies. Several studies have examined organizational capability and their relationship to green innovation, financial performance, and competitive advantage in specific industries using the Collis framework as a basis (Al-hakimi et al., 2022; Ali et al., 2022; Alnuaimi et al., 2021, 2021; Andersén, 2021; Chain, 2023; Dong Tong et al., 2023; Fang et al., 2020; Guang et al., 2023; Guo et al., 2020; Innovation & Manufacturing, 2022; D. Li & Shen, 2021; L. Li et al., n.d.; W. Li et al., 2023; Liu & Xu, 2021; Mart, 2023; Ning et al., 2023; Padilla-lozano & Collazzo, 2022; Pan et al., 2021; Serrano-garcía et al., 2022; Skordoulis et al., 2022; Su et al., 2020; Sun & Sun, 2021; Udeagha & Ngepah, 2022; Vasileiou et al., 2022; B. Wang et al., 2023; Yi et al., 2020; H. Yin, Chang, et al., 2022; F. Zhang et al., 2020; H. Zhang et al., 2023; W. Zhang et al., 2020; Z. Zhang et al., 2022; Zheng & Khurram, 2022; Zhou et al., 2020, 2020). Based on previous research, it is known that green innovation is a very important factor that must be carried out by the Company because companies that are able to innovate in an environmentally friendly way will create a competitive advantage automatically (Ahmed & Ahmed, 2022; Bag et al., 2022; Bartocci et al., 2023; Chen et al., 2023; Cheng & Li, 2024; Does et al., 2023; Du et al., 2022; Feng et al., 2022; Fu et al., 2023; Galindo-mart, 2020; Hang et al., 2022; S. Huang et al., 2020; W. Huang et al., 2022; Y. Huang et al., 2022; Lian et al., 2022; Lisha et al., 2023; Naser et al., 2022; J. Peng & Zheng, 2021; X. Peng et al., 2023; Raheem et al., 2023; Sánchez-sellero & Bataineh, 2022; Smes, 2021; Sobaih & Hasanein, 2020; Sun et al., 2020; Usman et al., 2020; L. Wang et al., 2020; S. Wang et al., 2022; S. Yin, Dong, et al., 2022; S. Yin, Wang, et al., 2022; Yu et al., 2022; R. Zhang & Fu, 2022; S. Zhang et al., 2020; Zhu & Tan, 2022).

Thus, the main objective of this study is to conduct a thorough analysis and evaluation of the relationship between the competitive advantages of MSMEs in Cirebon district and the Ability of Green Organizations and to investigate the mediating role of green innovation in this relationship. Thus, this study seeks to provide practical answers

that, by applying green organization capabilities and environmentally friendly innovations, can increase competitive advantages and support the long-term growth of these MSMEs. Therefore, the focus of this research is to conduct a comprehensive analysis and evaluation of the influence of Eco-Friendly Organizational Capabilities on the competitive advantage of MSMEs in Cirebon Regency, as well as to examine the mediation role of eco-friendly innovations in this relationship. Thus, this research aims to present effective solutions that can increase competitive advantage through the application of Green Organization Capabilities and environmentally friendly innovations, which contribute to the sustainable development of these MSMEs. The use of Structure Equation Modeling (SEM) as a data analysis tool in this study is new, which in previous research used Regression because the author aimed to find out the direct and indirect effects of the ability of environmentally friendly organizations on competitive advantages and the mediating role of environmentally friendly innovation. In addition, the author seeks to understand how green innovations are implemented by MSME actors in Cirebon Regency to utilize production waste from MSMEs to add economic value.

2 Theoretical Framework and Hypothesis Development

2.1 Theoretical Framework

Green Organization Capabilities.
Capabilities are essentially intangible resources that businesses use in a variety of ways to address key challenges. When these resources are optimally integrated, it will be a capability that helps businesses deal with problems effectively. Based on Collis' theoretical framework, today's organizational capabilities are evolving for sustainability, given the contemporary business environment and the global trend towards sustainability. This is especially true for MSMEs that experience significant environmental pressure. MSMEs in Cirebon Regency are severely affected by climate change, especially those that handle waste from product design and production. To reduce the negative impact of MSME production waste on the environment, a strategy must be created so that MSMEs in Cirebon Regency are motivated by the lack of natural resources to re-evaluate the composition of their products, sources of raw materials, and waste disposal methods.

The organizational capabilities of companies will eventually need to change into environmentally friendly organizational capabilities due to these pressures and the increasing demand for environmentally friendly structures and materials. These changes are essential to meet the problems posed by environmental concerns and adapt to how the use of sustainable practices by industries is evolving. Capabilities are essentially intangible resources that businesses use in a variety of ways to address key challenges. When these resources are optimally integrated, it will be a capability that helps businesses deal with problems effectively. Based on Collis' theoretical framework, today's organizational capabilities are evolving for sustainability, given the contemporary business environment and the global trend towards sustainability. This is especially true for

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The authors present the idea of "Green Organizational Capabilities" in response to pressure, which they define as the collective capacity of businesses to coordinate their different resources to strategically meet environmental protection goals. The author identifies three key elements: operational capability, dynamic ability to be environmentally friendly, and creativity to be environmentally friendly, which concisely captures the ability of environmentally friendly organizations in MSMEs in Cirebon Regency. These elements are based on Collis' theoretical framework which when combined, they give businesses the ability to confront environmental issues and actively promote environmentally friendly business practices. The ability of the business to carry out functional tasks effectively through resource selection and utilization is known as operational capability. Operational capabilities enhance a business's economic value by improving cost-effectiveness, quality, and efficiency in trans-forming inputs into desired outputs. This involves making efficient use of inputs like labor, materials, and technology as well as streamlining crucial technologies, resources, and processes.

The authors suggest that operational capability requires skills, processes, and habits that are embedded in an operational management system over time, allowing companies to carry out functional activities effectively and efficiently. Green dynamic capability is an organizational skill that allows businesses to assess and utilize current resources and knowledge to innovate and develop green competencies, thereby adapting to changing market dynamics.

Three key elements of dynamic green capabilities, namely resource integration, resource reconfiguration, and environmental literacy. The ability for resource integration is the simultaneous collection of resources from external and internal sources. Resource reconfiguration is the removal of unnecessary resources while optimizing, reallocating, or acquiring new resources (Dong Tong et al., 2023; Guo et al., 2020; Junsheng et al., 2020; Mart, 2023; Zaragoza-s et al., 2022). Environmental literacy is an organization's ability to collect and apply environmental data to recognize opportunities or threats, reflecting a business's response to environmental changes. This study defines dynamic green capability as a company’s competence in integrating, developing, and reorganizing internal and external resources related to environmental conservation.

The organizational innovation model focusing on the ideas generated is the most effective approach to assessing creativity, which is recognized as a valuable skill. These ideas can be related to new creative products, services, methods, or projects. While they don't have to be completely original, innovative ideas are invaluable when supporting

business goals. Businesses are forced to research and develop eco-friendly solutions to address environmental challenges due to the tightening of environmental regulations and increasing consumer concerns. In this context presents the idea of "green creativity", which is defined as the creation of new, inventive, and deliberate ideas for environmentally friendly goods, services, procedures, or practices.

Green Innovation.

Innovation is the introduction or improvement of new goods or services, as well as new organizational techniques, marketing strategies, or processes used within or outside the business environment. Green innovation is defined as an advancement in hardware or software of environmentally friendly products or environmentally friendly processes. These include targeted technological innovations for waste recycling, energy conservation, pollution prevention, eco-friendly product design, and corporate environmental governance (Cheng & Li, 2024; W. Huang et al., 2022; Y. Huang et al., 2022; Lisha et al., 2023; X. Peng et al., 2023; Usman et al., 2020; L. Wang et al., 2020; Yu et al., 2022). Many people agree with this definition. Therefore, this study adopts the definition proposed in accordance with the current understanding of green innovation.

Environmentally friendly innovations at the company level are divided into two categories, namely environmentally friendly process innovations and environmentally friendly product innovations. Improving products to achieve energy efficiency, pollution prevention, waste recycling, eco-friendly design, and sustainable business management is known as eco-friendly product innovation. Green innovation requires changes in current product designs to reduce the environmental impact throughout the product life cycle.

The creation of new eco-friendly products and the elimination of hazardous materials are examples of eco-friendly product innovations. In contrast, green process innovation is concerned with any modifications applied in the production process with the aim of reducing adverse environmental effects during the acquisition, processing, and transportation of raw materials and final goods. This type of innovation, which places a strong emphasis on green technology, aims to lower overall energy consumption and reduce green-house gas emissions by switching from conventional energy use to more sustainable alternative energy sources.

Competitive Advantage.

The company’s competitive advantage comes from the value it offers to its customers, such as lower prices or better benefits than its competitors. a company as having a competitive advantage when using value-creation tactics that cannot be imitated by current or future competitors. According to different points of view, a company has a competitive advantage if it outperforms its competitors in terms of success or generates more economic value, which is calculated as the difference between the perceived benefits of its resources and the cost of economic exploitation. Competitive advantage is a two-dimensional structure consisting of financial performance (quantitative dimension) and strategic performance (qualitative dimension) (Akter et al., 2020; Bhandari et al., 2022; Clauss et al., 2021; Distanont & Khongmalai, 2020; Does et al., 2023; Masliza

et al., 2021; Pan et al., 2021; Skordoulis et al., 2022; Zameer et al., 2020). Therefore, companies that adopt distinctive and irreplaceable strategies that create superior economic value over their competitors are said to have a competitive advantage.

Three common strategies typically used by businesses to achieve and maintain a competitive advantage: differentiation, focus, and overall cost leadership. Overall cost leadership i.e. Being the lowest cost provider of goods or ser-vices allows businesses to make above-average profits while maintaining prices that are in line with industry averages. Differentiation, i.e. aiming to convince clients that a business's goods or services are superior to its competitors such as design, technology, distinctive features, brand image, or first-class customer service, offering a variety of products, increasing brand loyalty, decreasing the elasticity of demand prices, and reducing the risk of substitutions. The focus strategy is to meet the unique needs of a specific group of customers. By targeting a niche market with little competition or low risk of substitution, businesses using this strategy can generate above-average profits.

2.2 Hypothesis Development

Impact of Green Organization Capabilities on Competitive Advantage.
MSMEs can choose and use resources in their operational management system more wisely when they have strong organizational capabilities. Companies set goals to achieve operational efficiency and maintain a competitive advantage because these capabilities have a direct impact on the core functions of the organization. Overall maintenance performance and efficiency are positively influenced by the strength of operational capabilities. Notably, operational capabilities have several beneficial effects, including higher revenues, lower costs for product development, and higher-quality products and processes already in use. The effective implementation of new operational processes allows businesses to quickly adapt to trends and stakeholder needs in today's dynamic and transformative business landscape. Gaining a competitive advantage depends largely on one's capacity to differentiate oneself in the value provided to clients. Different product lines emerged in response to shifting market demand as the business environment changed. Rigid traditional approaches can hinder progress. MSMEs must use insights from internal and external sources to adjust, change, remove, or redesign their business models as necessary. As a result, dynamic capabilities are crucial to maintaining a competitive advantage.

MSMEs that have dynamic green capabilities can effectively turn potential opportunities into advantages by integrating knowledge from various sectors and channeling it into innovation. MSMEs can collect and use market data, quickly spot opportunities and threats, and adapt to the changing environment. Speed has grown in importance as a source of competitive advantage for businesses in the digital age. A company is more likely to seize opportunities to prevent threats and ultimately gain a competitive advantage if its decision-making process moves quickly. The ability to be environmentally friendly has been shown in several previous studies to have a positive impact on the competitive advantage of companies (Adjei-bamfo et al., 2020; Awan et al., 2023; Gianni et al., 2022; Guo et al., 2020; Gupta et al., 2020; Padilla-lozano & Collazzo, 2022; Scarpellini et al., 2020, 2020; Smes, 2021; Sobaih & Hasanein, 2020; Su et al.,

2020; Zaragoza-s et al., 2022). The ability to be creative is what gives MSMEs a competitive advantage and is something special, unparalleled and priceless. Creatively produced goods, services, processes, or activities are not only valuable but also new, exciting, and unexpected, allowing their clients to provide exceptional value. MSMEs can increase their competitive advantage by implementing differentiation strategies using creativity. Eco-creativity is increasingly becoming the driving force behind the creation of new and practical ideas for eco-friendly products and processes in today's increasingly focused corporate social responsibility context. This helps MSMEs stay ahead of the competition and reap the rewards of being innovators. Proposing actions that improve brand image, reduce adverse environmental effects, and increase competitive advantage are considered eco-friendly creativity. Similar results from previous studies have shown that eco-friendly creativity has a positive impact on a company's competitive advantage.

Based on the results of previous related studies, the author proposed the following hypothesis:

H1: MSMEs' competitive advantage is positively impacted by the green organization capabilities.

The Mediating Role of Green Innovation on the Impact of Green Organizations' Capabilities on Competitive Advantage.

The main factor driving the increased need for innovation in a business is its capacity to increase output and value while requiring fewer resources. The entire operation of the organization is influenced by this orientation, which motivates efforts to adopt environmentally friendly procedures. Whatever the goal, the capacity to manage an organization effectively and efficiently is a prerequisite for green innovation and successful innovation practices. As part of this, functional activities that result in the creation of environmentally friendly goods and services are supported during the production process. Operational capabilities have been shown to have a positive impact on innovation in several previous studies (W. Huang et al., 2022; Sobaih & Hasanein, 2020).

MSMEs need to respond to a dynamic environment with a high level of innovation and creativity in addition to rapid adaptation. To drive innovation, especially eco-friendly innovation, which requires improving every aspect of a product or process to achieve sustainability, a company must have an eco-friendly dynamic capability, which is part of the dynamic capability associated with eco-friendly resources. MSMEs can adapt to the mandated changes in environmental governance will determine how quickly environmentally friendly innovations are developed in their operations. According to several previous studies, green innovation in business is positively influenced by the dynamic ability to be environmentally friendly (Awan et al., 2023; Does et al., 2023; Smes, 2021; Usman et al., 2020; S. Wang et al., 2022).

Innovation is the actual application of ideas, while creativity concentrates on its creation. Creativity is the "raw material" for innovation, according to research on the correlation between creativity and the level of innovation in business. Creative thinking generates new ideas that are then embodied in action during the process which increases the likelihood that innovation will succeed. When an organization adopts an original and beneficial eco-friendly concept, it creates a procedure that promotes eco-friendly

innovation. In addition, it also asserts that the development of eco-friendly products performs better when green creativity is present. Companies will produce more environmentally friendly innovations if they adopt eco-friendly creative ideas to improve procedures and practices. As a result, the authors put forward the following hypothesis:

H2: Green innovation plays a mediating role in the relationship between MSMEs' competitive advantage and the impact of green organization capabilities.

Based on the above theory and analysis, we propose a research model (Figure 1):

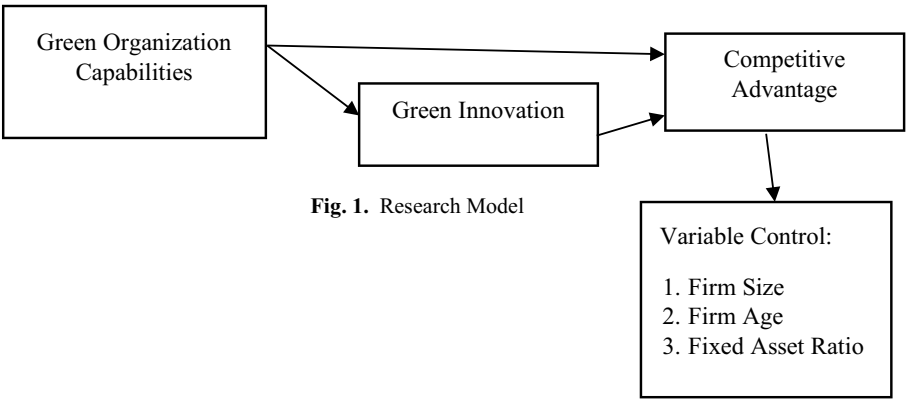

Fig. 1. Research Model

3 Method, Data, And Analysis

3.1 Method

The research method used is quantitative research using Structure Equation Modelling (SEM) PLS, a multivariate analysis method that can describe the linear relationships simultaneously between observation variables (indicators) and variables that cannot be measured directly (latent variables).

3.2 Data collection

The unit of analysis in this study is MSMEs in Cirebon Regency, such as tempeh, tofu, rattan handicraft, and other factories. The authors directly surveyed MSME owners and employees who fully understand environmental information for MSMEs located in the Cirebon regency to collect primary data. The author compiled a list of 339 MSME sector companies in Cirebon Regency. Innovation of environmentally friendly processes carried out by MSMEs by reducing resource costs and overall costs as well as by reducing waste, preventing environmental damage, and increasing resource efficiency. The author collects information through questionnaires distributed to respondents to measure predefined indicators.

3.3 Population and Sample

To test the hypothesis that has been proposed in figure 1, a research questionnaire was made that was distributed to MSMEs in Cirebon Regency. The author uses the Slovin formula with an error rate of 5%, which is as follows: n = 2,230 / (1 + (2,230 × 0.052)) = 339.

With a sample size of 339 respondents, probability sampling is a sampling technique used in this study, meaning that every respondent who meets the eligibility requirements is given the same opportunity to be included in the sample.

3.4 Measurement Variables

The researchers did the following to establish the scale of the study: Judging by the age of the business, the companies surveyed were as follows: i.e. over 3 years old and have more than 3 employees and assets above 10 million. To find out initial information about MSMEs, the author collected data through the website of the Central Statistics Agency of West Java Province and the Cirebon Regency Micro, Small and Medium Enterprises Cooperative Office. The study uses a 5-point Likert Scale, from level 1 (strongly disagree) to level 5 (strongly agree), used to measure: Green organizational capability (GOC), green innovation (GI), and Competitive Advantage (CA).

Table 1. Measurement Indicators

Indicators	**Green Organization Capabilities**
GOC-1	Continue to reduce waste, which consists of organic waste, inorganic waste, and hazardous and toxic material waste.
GOC-2	Combining supplier knowledge and competencies in managing environmental impacts.
GOC-3	Restructuring to concentrate on environmental sustainability.
GOC-4	Able to keep up with and respond to changes in environmentally friendly technology on time.
GOC-5	Employees of the company propose new eco-friendly ideas to improve environmental performance.
GOC-6	Employees of the company implement environmentally friendly ideas into a comprehensive Plan
Indicators	**Green Innovation**
GI-1	Selecting materials that produce the least pollution for product development or product design.
GI-2	Determines whether a product is easily recyclable, reused and directly degradable for product development or product design.
GI-3	Has an effective manufacturing process to reduce emissions of hazardous substances or waste.
GI-4	Performs operating processes that reduces the consumption of water, electricity, gas, coal, etc.
GI-5	Conduct operating process that reduces the use of raw materials and use renewable energy
Indicators	**Competitive Advantage**
CA-1	Provides products or services of better quality and has a cost advantage over its competitors.
CA-2	Has a large market share
CA-3	Increased Return on Investment
CA-4	Profit on Sales increased.
CA-5	Income Before Interest and Taxes increase

3.5 Data Analysis Techniques

This study uses a structural equation model, which is a method used in research on the direct and indirect influence between exogenous and endogenous variables. The researchers used the Smart PLS 4.1 software to evaluate the measurement scale and test the hypothesis. The authors perform the following verification steps: i.e. to measure the reliability of the data using the Alpha Cronbach coefficient. When the Cronbach alpha > 0.6 and the total variable correlation > 0.3, the data is declared reliable. The author uses exploratory factor analysis (EFA) to consider and eliminate factors that are inconsistent with the model and conclude hypotheses through structural equation modeling (SEM) which is a multivariate data analysis method used to examine the direct influence between the variables of Green Innovation Ability on Competitive Advantage and the indirect influence through variables and indicators of Green Innovation mediation. SEM is a statistical technique that can integrate quantitative data and incorporate causal assumptions into models.

4 Result And Discussion

This study employs a robust structural equation model, a widely accepted method for investigating the direct and indirect influence between exogenous and endogenous variables. The researchers utilized the Smart PLS 4.1 software, a trusted tool in the field, to assess the measurement scale and test the hypothesis. The authors meticulously followed verification steps, including measuring data reliability using the Alpha Cronbach coefficient. When the Cronbach alpha > 0.6 and the total variable correlation > 0.3, the data is deemed reliable. Structural equation modeling (SEM) is a powerful multivariate data analysis method used to examine the direct influence between the variables of Green Innovation Capability on Competitive Advantage and the indirect influence through variables and indicators of Green Innovation mediation. SEM is a statistical technique that can integrate quantitative data and incorporate causal assumptions into models, underscoring the robustness of our approach.

In figure 1, the convergence validity value, which indicates the validity of the measurement indicator, was a key focus of this study. The value of convergent validity, which should be> 0.7, was thoroughly examined through the loading factor on endogenous and exogenous variables. The results of the analysis revealed that all load factor values above 0.7, indicating that all measurement indicators are valid, providing a strong foundation for the study's findings.

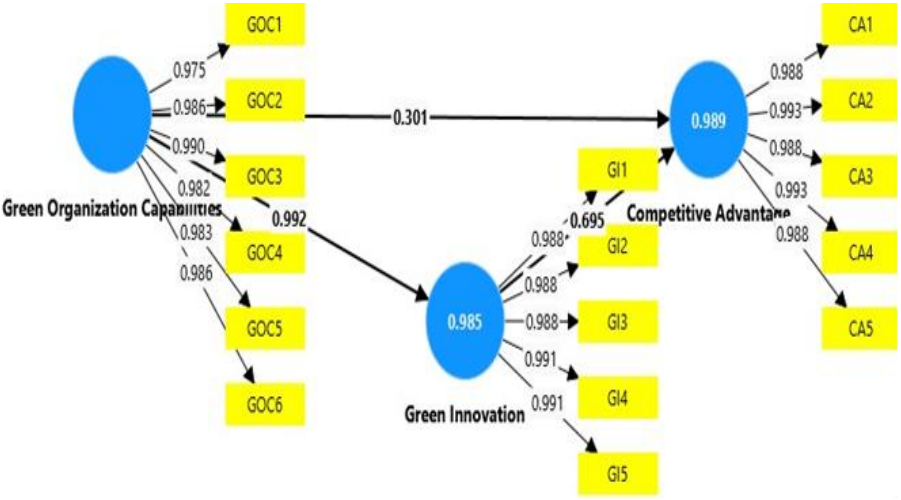

Fig. 2. Loading Factor

GOC1 has a Loading Factor (LF) of 0.975 ≥ 0.70 which means that this item validly measures the Green Organizational Ability variable. Overall, each indicator that measures the variables in this study has a Loading Factor ≥ 0.70 which means valid.

Table 2. Construct Reliability and Validity-Overview

	Cronbach's Alpha	Composite Reliability(rho_a)	Composite Reliability(rho_c)	Average Variance Extracted (AVE)
Competitive Advantage	0.995	0.995	0.996	0.980
Green Innovation	0.995	0.995	0.996	0.979
Green Organization Capabilities	0.993	0.993	0.994	0.968

Table 2 shows that The Green Organization Capabilities variable has a Composite Reliability (CR) value of 0.986 ≥ 0.70 which indicates that the level of reliability of the variable is accepted. Other measures, namely Cronbach's Alpha and Rho A, produce values above 0.70 meaning they are reliable. The results show that the level of reliability/internal consistency of the Green Organization Capabilities variable is acceptable. Similarly, other variables, namely Competitive Advantage and Green Innovation, have composite reliability, Cronbach alpha, and Rho A above 0.70, meaning reliable.

In table 2 The value of the AVE Competitive Advantage is 0.980 which means that the magnitude of the measurement indicators GOC1, GOC2, and GOC3, GOC4, GOC5, GOC6 in the Competitive Advantage variable is 98.0%. Because the AVE Competitive Advantage value of 0.980 ≥ 0.50 meets the requirements of good convergent validity. Overall, the AVE value of all variables ≥ 0.50 meaning that the convergence validity of the variable was accepted.

Table 3. Discriminant Validity Heterotrait Monotrait Ratio (HTMT)-List

	Heterotrait Monotrait Ratio (HTMT)
Green Innovation <-> Competitive Advantage	0.899
Green Organization Capabilities <-> Competitive Advantage	0.897
Green Organization Capabilities <-> Green Innovation	0.898

In table 3 the HTMT value of each variable pair is less than 0.90, then the evaluation of the validity of discrimination with HTMT is met. Variance is divided by a higher variable for its respective measurement indicator than by other variable indicators. The evaluation of the validity of discrimination with HTMT is met. Recently, researchers have recommended HTMT reporting over Fornell and Lacker because of HTMT's ability to detect the validity of discrimination better.

Table 4. Discriminant Validity – Fornell – Larcker Criterion

	Green Organization Capabilities	Green Innovation	Competitive Advantage
Green Organization Capabilities	0.994		
Green Innovation	0.990	0.992	
Competitive Advantage	0.991	0.990	0.984

In table 4 shown the root of AVE for Green Organizational Capability is (0.994), has a greater correlation with Competitive Advantage (0.991), and greater than its correlation with Green Innovation (0.990). so that the validity of discrimination for the Green Organizational Ability variable is met. Likewise with the variables of Competitive Advantage, and Green Innovation where the root of the AVE of each variable is greater than the correlation between variables. Overall, it means that the evaluation of the validity of the discrimination is met.

Table 5. Discriminant Validity – Cross Loadings

	Competitive Advantage	Green Innovation	Green Organization Capabilities
CA1	0.988	0.983	0.981
CA2	0.993	0.983	0.981
CA3	0.988	0.983	0.981
CA4	0.993	0.983	0.981
CA5	0.988	0.988	0.981
GI1	0.982	0.988	0.986
GI2	0.982	0.988	0.981
GI3	0.982	0.988	0.981
GI4	0.985	0.991	0.981
GI5	0.985	0.991	0.981
GOC1	0.963	0.963	0.975
GOC2	0.975	0.979	0.986
GOC3	0.982	0.986	0.990
GOC4	0.976	0.977	0.982
GOC5	0.976	0.976	0.983

GOC6	0.976	0.976	0.986

Based on table 5, the value of the validity of discrimination is the value of the cross-loading factor which aims to determine the related discrimination in a research construction. Cross-loading is the evaluation of the validity of discrimination at the level of measurement indicators. Each Green Innovation measurement indicator (GI1, GI2, GI3, GI4, GI5) has a higher correlation with Green Innovation compared to other variables. GI1 correlated higher (0.988) with the Green Innovation variable measured and correlated less with Green Organizational Ability (0.986), correlated lower with Competitive Advantage (0.982). Overall, each measurement indicator correlates higher with the variable it measures and less correlates with other variables, so that the evaluation of the validity of discrimination at the measurement indicator level is met.

Table 6. Collinearity Statistics (VIF) – Inner model – Matrix

	CA	GI	GOC
Competitive Advantage			
Green Innovation	1.000		
Green Organization capabilities	1.000	1.000	

Table 6 shows that before testing the structural model, it is necessary to check the multicollinearity between the variable and the VIF Inner model. The estimation results show that the VIF (variance Inflated Factor) value is more than 10, so there is no multicollinearity between variables that affect Competitive Advantage or Green Innovation.

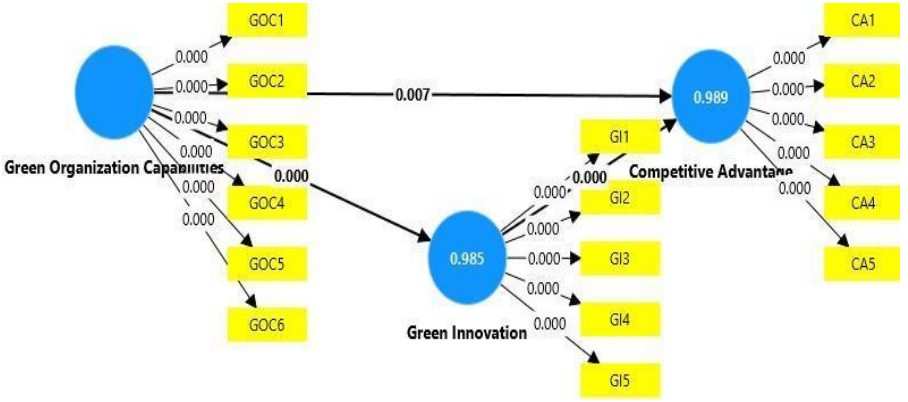

Fig. 3. Bootstrapping

Table 7. Path Coefficients Mean, STDEV, T value, P Value

	Original Sample(O)	Sample Mean(M)	ST DEV	T Statistics (Io/STDEV)	P-Value

GOC -> CA	0.301	0.308	0.112	2.693	0.007
GOC -> GI	0.992	0.993	0.002	478.035	0.000
GI -> CA	0.695	0.689	0.112	6.219	0.000

In figure 2 and table 7, it is known that the analysis of the variable path of Green Organizational Capability has a positive and significant influence on Competitive Advantage of (0.301) with statistics t (2.693 > 1.96) or p-value (0.007 < 0.05) as can be seen in figure 3, which means that every change in Green Organizational Capability will significantly increase Competitive Advantage. analysis of the variable path of Green Organizational Capability has a significant impact on Green Innovation by (0.992) in figure 2 and table 7 with t-statistics (478.035 > 1.96) or p-value (0.000 < 0.05) in figure 3 which means Any change in Green Organizational Capability will significantly increase Green Innovation. Furthermore, the analysis of the Green Innovation variable path has a positive and significant influence on Competitive Advantage (0.695) in figure 2 and table 7 with statistics t (6.219 < 1.96) or p-value (0.000 < 0.05) in figure 3 which means that every change in Green Innovation will affect the increase of Competitive Advantage.

Table 8. Specific Indirect Effects – Confidence Intervals

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
GOC -> GI -> CA	0.689	0.683	0.454	0.895

Table 8 shows that in the confidence interval of 97.5%, the influence of Green Organizational Capability on Competitive Advantage is located between (0.454) to (0.895), meaning that when Green Organizational Capability is improved with various activities, the impact on financial performance will increase to 0.895.

Table 9. f-square – list

	f-square
Green Innovation -> Competitive Advantage	0.678
Green Organization Capabilities -> Competitive Advantage	0.127
Green Organization Capabilities -> Green Innovation	64.685

In table 9, it is known that the Effect Size describes the influence of variables at the structural level. The direct effect of the effect size uses a square F with the criteria of square F (0.02 low, 0.1 medium, 0.3 high), Hair et al (2017). Green Organizational Ability has a moderate influence on Competitive Advantage (f squared = 0.127) and Green Organizational Capability has a high influence on Green Innovation (f squared = 64.685). Green Innovation has a moderate influence on Competitive Advantage (f squared = 0.678). Thus, if entrepreneurs want to be stable in running their business,

they must do Green Organizational Capabilities and Green Innovation to increase their Competitive Advantage.

Table 10 shows that the total analysis of the indirect effect of the influence of green organization capabilities on competitive advantage can be seen in the original sample of 0.689. The coefficient of the Green Organizational Capability path on Competitive Advantage with a P-Value < 0.05, meaning that Green Organizational Capability has a positive and significant effect on Competitive Advantage.

Table 10. Total Indirect Effects – Mean, STDEV, T Value, P Value

	Original Sample (O)	Sample mean (M)	ST.DEV	T-Statistics (IO/STDEV)	P Value
GOC -> CA	0.689	0.683	0.111	6.223	0.000

(Source: Data Processing, 2024)

The results of the analysis in Table 11 on the influence of the indirect effect of Green Organization Capability on Green Innovation that have an impact on increasing Competitive Advantage are 0.000 and significant (P value > 0.05). Thus, Green Innovation mediates the influence of Green Organizational Capabilities on Competitive Advantage. The role of mediation is partial mediation.

Table 11. Specific Indirect Effects-Mean, STDEV, T Values, P Values

	Sample mean (M)	ST.DEV	T-Statistics (IO/STDEV)	P Values
GOC-> GI-> CA	0.683	0.111	6.223	0.000

From table 12, it is known that the total influence is the influence of the Green Organization Capabilities (GOC) variable on Green Innovation (GI) of 0.992 plus the influence of the Green Innovation (GI) variable on Competitive Advantage (CA) of 0.695, which can be seen in the Original Sample is 1.687.

Table 12. Total effect-Mean, STDEV, T values, p Values

	Original Sample (O)	Sample mean (M)	STDEV	T statistics (O/STDEV)	P values
GI -> CA	0.695	0.689	0.112	6.219	0.000
GOC -> CA	0.991	0.991	0.002	400.674	0.000
GOC -> GI	0.992	0.993	0.002	478.035	0.000

From table 13 is known the influence of Green Organizational Capability on Competitive Advantage is 98.9%, which is included in the category of extraordinarily strong correlation coefficients. The influence of Green Organizational Capability on Green Innovation is 98.5%, included in the category of extraordinarily strong correlation coefficients. This means that if MSMEs want to increase their competitive advantage,

they must have green organization capability and if they want to be optimal, they must be supported by making environmentally friendly innovations.

Table 13. R square – Overview

	R-Square	Adjusted R-square
Competitive Advantage	0.989	0.989
Green Innovation	0.985	0.985

From table 14, it is known that the SRMR value is 0.005 < 0.10, meaning that it is acceptable, and the proposed model matches or is close to the empirical data.

Table 14. Model fit

	Saturated model	Estimated model
SRMR	0.005	0.005
d_ULS	0.004	0.004

Impact of green organizational capabilities on competitive advantage.
The results of the hypothesis test found that the Green Organization Capabilities variable had a positive effect on Competitive Advantage. This shows that MSME actors in Cirebon Regency have understood the importance of Green Organization Capabilities so that they can encourage an increase in Competitive Advantage. The increase in competitive advantage can be seen from the increase in profits, the number of product variations produced, the number of customers, the number of sales, and the number of assets each year. The ability of a Green Organization can help increase Competitive Advantage for MSMEs by creating the ability to manage environmentally friendly products starting from the process of selecting raw materials, selecting suppliers, and the production process to the process of selling goods to consumers. The results of this study are in line with the results of previous research (Does et al., 2023) that Green Organizational Ability will increase Competitive Advantage. Thus, if MSMEs want to increase their competitive advantage, they must increase the role of green innovation in optimizing the ability of green organizations which will have an impact on increasing competitive advantage, this is in line with the resourced base view (RBV) theory that MSMEs must optimize all internal and external resources to achieve competitive advantage (Andersén, 2021; Bhandari et al., 2022; McGahan, 2021).

The Influence of Green Organization Capabilities on Green Innovation.

The results of the tests conducted in this study show that the Green Organization Capabilities variable has a positive effect on Green Innovation. This study shows that MSMEs in Cirebon district that have been able to implement Green Organization Capabilities will increase environmentally friendly innovations in their production process so that they will reduce production costs, make by-products from leftover raw materials to increase income and avoid environmental pollution. This research is in line with previous research (Andersén, 2021; Guo et al., 2020; L. Li et al., n.d.; Mart, 2023) that

more MSMEs that implement Green Organizational Capabilities will increase Green Innovation in their production process so that it becomes more environmentally friendly and reduces environmental pollution and adds economic value.

The Influence of Green Innovation on Competitive Advantage.

The results of hypothesis testing show that the Green Innovation variable has a positive effect on Competitive Advantage. Thus, increasing environmentally friendly innovations will increase Competitive Advantage for these MSMEs, such as the remains of raw materials for making the main products of MSMEs are processed into by-products so that they add value and can be sold, such as the rest of the manufacture of rattan chairs, rattan cabinets, or furniture can be made into souvenirs, keychains, rattan plates, fans, trash cans, flower vases, and other products, Meanwhile, waste that cannot be recycled is burned and used as a mixed material in the manufacture of paving blocks. Batik garment making leftover fabric can be used to make wallets, hair bands, cosmetic holders, pencil cases and others. This research is in line with the resource base view theory (Dong Tong et al., 2023; W. Li et al., 2023; Neumann et al., 2021; W. Zhang et al., 2020) and previous research (Andersén, 2021; Does et al., 2023; Dong Tong et al., 2023; Guo et al., 2020; Padilla-lozano & Collazzo, 2022; Pan et al., 2021; J. H. Wang et al., 2024)s that Green Innovation will increase Competitive Advantage.

The effect of green organizational capabilities on competitive advantage mediated by green innovation.

The results of this hypothesis test reveal that Green Organizational Capabilities have a positive effect on Competitive Advantage mediated by Green Innovation. MSME actors who have understood the importance of implementing Green Organization Capabilities will be able to increase environmentally friendly product innovations and will increase competitive advantages for these MSMEs because they will have more value and competitiveness that their competitors do not have. The results of this study are in line with the Resource Base View theory (McGahan, 2021) and previous Research (Akter et al., 2020; Alnuaimi et al., 2021; Awan et al., 2023; Clauss et al., 2021; Distanont & Khongmalai, 2020; Does et al., 2023; Hang et al., 2022; Pan et al., 2021; Skordoulis et al., 2022; Su et al., 2020; S. Wang et al., 2022; Woo & Kang, 2021; Zaragoza-s et al., 2022) that Green Innovation mediates the influence of Green Organizational Capability on Competitive Advantage.

Conclusion

From the results of the above research, it can be seen that the Capability of Green Organizations will increase Competitive Advantage both directly and through the mediation of Green Innovation, meaning that if MSME owners want to have a competitive advantage, then they must have environmentally friendly organizational capabilities in order to be able to carry out environmentally friendly innovations both in the raw material input process, as well as in the production process and the final waste disposal process so that the raw materials chosen are raw materials and product packaging that

are safe for the environment, and in the production process is carried out without polluting the environment. The rest of the raw materials can be processed into by-products that have a selling value so that they can create a competitive advantage for MSME actors and waste that cannot be recycled is collected in a container where it is incinerated and then burned, and the ash is used as a mixture of materials to make paving blocks.

MSMEs must consider the raw materials used to be more cost-effective and not pollute the environment, as well as separate recyclable waste (organic waste) and non-recyclable waste (organic waste). Furthermore, recyclable waste is processed into other more useful by-products, such as leftover wood raw materials on MSME furniture that it is processed into vases, ashtrays, pencil boxes, wall shelves, and some of them. On the other hand, the remaining pieces of batik cloth are processed into cloth brooches in the form of flowers, wallets, souvenirs, and so on, and the remnants of raw materials for making rattan crafts are processed into keychains, manual fans, tumpeng steamers, and more useful souvenirs. In addition, for packaging, non-hazardous materials are choosen, such as tempeh wrappers using banana leaves, because in addition to its delicious taste, it also does not pollute the environment because it decomposes and is destroyed by the soil faster than tempeh wrappers made of plastic that cannot be destroyed and are not decomposed by the soil which can pollute the environment. Non-recyclable waste is collected and then burned as a mixture to make a mixture of building materials such as paving blocks and the like, while for liquid waste, a landfill is made far from residential areas so as not to interfere with the health of residents and household waste such as vegetables can also be made as materials to make biogas as a substitute for fossil fuels in order to reduce waste, and does not pollute the environment and reduce greenhouse gas emissions and reduce the pile of household waste.

Implication/Limitation and Suggestions.

The limitation of this study is that the time used to conduct the research is very limited with respondents only in Cirebon district so that further research can be carried out with a longer time and a wider research location to be used as a comparison.

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Disclosure of Interests.

The authors have no competing interests to declare that they are relevant to the content of this article.

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