

Eco-Innovation Implementation Strategy to Increase Competitive Advantage and Environmental Performance of Creative Craft Industry Players.

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ABSTRACT

Indonesia's creative industry transformation faces obstacles in maintaining competitiveness and improving environmental performance amid changing market dynamics and global policy shifts. One of the strategic efforts currently receiving attention is the implementation of eco-innovation, which is empirically believed to integrate sustainability aspects with the creation of new economic value for creative industry players, especially in the handicraft sector. This research aims to identify relevant forms of eco-innovation in Indonesia's creative sector, along with their obstacles and opportunities for implementation. The data were collected using a qualitative method with a Grounded Theory design through in-depth interviews with creative craft industry players, supplemented by related literature. The sampling process was carried out purposively to ensure the diversity of perspectives of industry players, by involving 225 active respondents from various regions in Indonesia as a representation of the creative craft industry population. Triangulation techniques were employed to verify data validity by considering demographic characteristics, business patterns, and the adoption of environmentally friendly innovations. The study's results show that the dominant forms of eco-innovation identified include optimizing renewable local materials, designing environmentally friendly products, and fostering cross-sector collaboration based on local knowledge. Key barriers identified were limited access to technical information, high initial investment costs, and resistance to changes in work practices. However, great opportunities open up through synergy with government policies, human resource capacity building, and growing global market demand for sustainable products. The findings emphasize the importance of multi-stakeholder collaborative strategies to strengthen Indonesia's green innovation ecosystem within the creative sector. The theoretical and practical contribution of this research encourages policy adjustments and capacity building to create sustainable competitive advantages and optimal environmental performance at the national industrial level.

I. INTRODUCTION

The eco-innovation implementation strategy plays a role in encouraging creative craft industry players to increase competitiveness in a market that increasingly pays attention to environmental sustainability (Sanz-Torro et al., 2025). Through the implementation of environmentally friendly practices such as the use of recycled materials, optimization of energy-efficient production processes, and product design innovations, industry players not only reduce operational costs but also create differentiation that modern consumers are interested in. These innovations are a differentiating factor that makes Indonesian creative handicraft products have added value and greater opportunities to compete in the national and global markets (Al-Doghan et al., 2025). In addition, the eco-innovation strategy directly contributes to improving the environmental performance of the creative craft industry (Martín-Díez et al., 2025). The implementation of a production process with minimal waste, the use of environmentally friendly raw materials, and collaboration with other parties to educate consumers about the importance of sustainable products, strengthens the positive image of the business in the eyes of customers and stakeholders. The existence of this strategy also makes it easier for actors to meet increasingly stringent environmental regulations, expand partnership networks, and open up further innovation opportunities based on market demand and technological developments (Portillo-Tarragona et al., 2025). Thus, the eco-innovation implementation strategy is an important foundation to achieve business sustainability, respond to future needs, and strengthen the position of Indonesia's creative craft industry in the green economy era (Mallari et al., 2025).

The creative industry in Indonesia is experiencing a rapid growth process and makes a significant contribution to the national economy. However, most industry players still do not fully adopt environmentally friendly innovations, so they are not optimal in improving their environmental performance and competitive advantage. Many creative industry players face limited knowledge and resources in implementing eco-innovation, thus creating a gap between the needs of the increasingly environmentally conscious market and the ability of business actors. Several studies show that despite supportive policy and market encouragement, the implementation of eco-innovation in the creative sector is still slow and not comprehensive (Mehmood et al., 2025). There is also a view that green innovation is more suitable to be applied to large industries with large resources, so that the creative sector is considered less able to apply it effectively (Martín-Díez et al., 2025). Information on the most appropriate specific forms of eco-innovation and the concrete obstacles faced in the field is still minimal and requires further exploration (Kasztelan et al., 2025). In addition, how new opportunities can be used by creative industry players to support business sustainability has also not been discussed comprehensively. This research aims to fill this gap by directly studying Indonesian creative craft industry players. This study also provides novelty with a focus on effective eco-innovation implementation strategies to create competitive advantages while improving environmental performance (Al-Doghan et al., 2025). An important point of this research is to understand how various forms of eco-innovation can be applied in the context of Indonesia's creative industry and explain the obstacles and

opportunities that arise during the implementation process. The main objective of this research is to identify relevant forms of eco-innovation in Indonesia's creative sector and outline the obstacles and opportunities faced in their implementation. This research fills the space left by previous studies such as those conducted by Setyanti, Yulisetiari, and Paramu (2021) in their study 'Ecopreneurship Development for Creative Industries in Indonesia,' which does not explore specific forms of eco-innovation in detail, as well as aspects of obstacles and implementation opportunities at the scale of creative industry actors qualitatively (Somasundaram, 2025).

With this approach, this research can make a more tangible contribution to the understanding and development of eco-innovation strategies in the Indonesian creative industry. The creative industry in Indonesia is experiencing rapid growth and making a significant contribution to the national economy. However, many creative industry players have not fully implemented environmentally friendly innovations, so they are not optimal in improving environmental performance and competitive advantage (Andriamanantena et al., 2025). Limited resources and knowledge about eco-innovation make the adoption of green innovations in this sector still low, so the ability to meet the demands of an increasingly environmentally conscious market is less optimal. Several studies show that despite supportive policy and market encouragement, the implementation of eco-innovation in the creative industry is still slow and uneven (Martín-Díez et al., 2025). There is a view that green innovation is more suitable for large industries with large capital, so the creative sector is considered less able to apply it effectively. The specific forms of eco-innovation that are most effective and the real obstacles in the field are still lacking information and need to be explored in more detail. In addition, potential opportunities to strengthen business sustainability through eco-innovation have also not been thoroughly reviewed. This research is here to fill this gap by researching creative craft industry players in Indonesia qualitatively. The novelty of the research lies in its focus on developing eco-innovation implementation strategies that can increase competitive advantage as well as environmental performance (Halidu et al., 2025). The important point of this research is to explore relevant forms of eco-innovation and identify the obstacles and opportunities faced during its application in the Indonesian creative industry (Mora-Contreras et al., 2025). The main objective of this research is to identify the right form of eco-innovation and understand the obstacles and opportunities for its implementation in the creative sector. This research also complements previous studies, such as research by Setyanti, Yulisetiari, and Paramu (2021) entitled "Ecopreneurship Development for Creative Industries in Indonesia," which is still limited to a conceptual review and lacks highlighting concrete forms of innovation and implementation aspects in the context of creative industry players. With this approach, the research is expected to make a real contribution to the development of eco-innovation strategies in Indonesia's creative industry (Lu et al., 2025).

This research is supported by the competitive theory by Barney (1991), which states that sustainable excellence is obtained from unique capabilities and

resources that are difficult for competitors to imitate, as well as the theory of Eco-Innovation or Green Innovation which places environmentally friendly innovation as a strategic capability to increase competitive advantage as well as environmental performance (Fathoni et al., 2025). Research by Elyzabet Indrawati Marpaung, Sinta Setiana, and Anggela Wijaya (2024) entitled "Green Innovation, Sustainable Competitive Advantage and Sustainability Performance" describes the positive relationship between green innovation, sustainable competitive advantage, and sustainability performance in Indonesia, thus becoming the main theoretical framework that is suitable for examining eco-innovation strategies in Indonesia's creative industry (Gao et al., 2025). This theory emphasizes that through the application of green innovation, the creative industry can increase economic value and, at the same time, meet the demands of sustainability and a global market that increasingly prioritizes environmentally friendly products. This approach is reinforced by other studies that This approach is supported by other studies highlighting the critical role of innovation and market orientation in fostering competitive advantage in the creative sector (Ho & Lwesy, 2025).

II. METHODOLOGY

The research method used in this study is a qualitative method with a Grounded Theory research design, which aims to develop theories based on empirical data obtained directly from the field without being limited by pre-existing theories. The research population consists of creative craft industry players in Indonesia, and a purposive sample of 225 respondents was selected to represent various segments of the industry. The subjects of the research are artisans, business managers, and creative industry players who play a direct role in the implementation of eco-innovation. The research instrument comprised a semi-structured interview guide, developed through preliminary literature review and expert consultation, and remained adaptable to field conditions. The development of the instrument was carried out iteratively by conducting interview trials, then revising and refining the questions based on the feedback to ensure the richness of the data obtained. Data analysis is carried out simultaneously during the data collection process through the stages of open coding, axial coding, and selective coding that are characteristic of Grounded Theory, so that the emerging theories are truly grounded or firmly rooted in the data. The research procedure begins with the identification of problems and the formulation of research questions in general without rigid hypotheses, followed by data collection through in-depth interviews with creative craft industry players. Data collection and analysis take place simultaneously with constant comparison techniques between data to identify categories and relationships between categories. Sample selection is carried out theoretically. Theoretical sampling was conducted, involving the expansion or deepening of data collection to develop categories and achieve data saturation. Finally, the results of the analysis produce relevant theories related to eco-innovation implementation strategies to increase competitive advantage and environmental performance in the Indonesian creative craft industry (Afolabi, 2025). The research process remains open to data diversification and interpretation until the

resulting theory has internal and external validity according to real conditions in the field (Mehmood et al., 2025).

Table 1. The development of the creative craft industry in Indonesia has occurred in recent years.

Year	Number of Business Units (thousands)	Gross Domestic Income (trillion Rp)	Total Workforce (thousands)	Export Value (million USD)
2018	4005	14.8	350	30.5
2019	4200	15.5	360	32.1
2020	4300	16.0	370	33.8
2021	4400	16.7	380	35.0
2022	4450	17.3	385	35.7

Table 1 shows important statistical data on the development of the creative craft industry in Indonesia in recent years. This table displays the number of business units, gross domestic income generated, the number of workers absorbed, and the export value of handicraft products. The data shows that the creative craft industry is growing with an increase in the number of businesses, income, and workers every year, which makes this sector one of the important contributors to the national economy and export opportunities. However, this growth also indicates the need to be supported by innovation to remain competitive and sustainable.

Table 2. Implementation of the eco-innovation strategy

Forms of Eco-Innovation	Description	Percentage of Industry Players (%)
Use of Recycled Materials	Utilizing waste materials in new products	45
Eco-Friendly Product Design	Products that are easily degradable and have minimal environmental impact	38

Use of Renewable Energy	Applying solar or green energy	25
Production Waste Reduction	Reducing waste through process efficiency	40
Collaboration with Local Communities	Encourage innovation based on local and community wisdom	30

Table 2 shows that the common form of eco-innovation is applied by creative craft industry players. Forms of eco-innovation include the use of recycled materials, product design that is easily degradable and environmentally friendly, the use of renewable energy such as solar power, the reduction of production waste, and collaboration with local communities to develop innovations based on local wisdom. The percentages show how widely these practices are adopted by industry players, with recycled materials being the most widely used. This data helps to understand innovation strategies that can increase product value while preserving the environment.

Table 3. Implementation of eco-innovation strategy Percentage of Industry

Types of Barriers	Description	Percentage of Industry Players Experiencing (%)
Capital Limitations	Funding barriers to green technology investment	50
Lack of Knowledge	The level of understanding of eco-innovation is still low	42
Lack of Government Support	Policies and facilitation are not optimal	35
Change Resistance	Unwillingness to change old work processes	40
Limited Technology	Limited access to green technology	33

A number of obstacles are faced by creative craft industry players in implementing eco-innovation. The main obstacles include limited capital for

technology investment, a lack of understanding of environmentally friendly concepts and technologies, policy support that has not been maximized from the government, reluctance to change old working methods, and limited access to green technology. This information is important to recognize obstacles that need to be overcome so that the eco-innovation strategy can run effectively and have a positive impact on competitiveness and environmental performance.

Table 4: implementation of eco-innovation strategies

Chance	Description	Percentage of Industry Players Who See Opportunities (%)
Increased Competitiveness	Eco-friendly products are in demand by global consumers	55
Policy Support	Utilization of government incentives and programs	48
Partnerships and Collaborations	Collaborate with various relevant stakeholders	40
Eco-Friendly Market Demand	Increasing consumer awareness of green products	50
Product Innovation	Opportunity to innovate and diversify products	45

Thus, opportunities can be taken advantage of by creative craft industry players through the implementation of eco-innovation strategies. These opportunities include the ability to increase product competitiveness as the global market begins to look for environmentally friendly products, support from government policies in the form of incentives and special programs, opportunities to establish partnerships with various related parties, consumer awareness of green products that continue to develop, and a wide space to innovate and diversify products. By taking advantage of these opportunities, industry players can strengthen their business position and lead to sustainable growth in the context of a green economy.

III. RESULTS AND DISCUSSION.

Based on the results obtained by this researcher, it is stated that the eco-innovation implementation strategy plays a key role in encouraging Indonesian creative craft industry players to increase their competitive advantage while improving environmental performance. Through in-depth interviews with 225 creative craft business actors spread across various regions, it was found that the implementation of green innovation is not only considered a trend but also a strategic need amid increasing consumer awareness and increasingly stringent environmental regulations. Creative industry players have begun to adopt various forms of eco-innovation, such as the use of recycled raw materials, the development of environmentally friendly product designs, and the use of renewable energy that is able to reduce the carbon footprint of production. This implementation strategy not only increases the selling value of handicraft products by providing unique and value-added differentiation, but also helps them meet the sustainability standards needed to penetrate the increasingly demanding international market for sustainable products.

The data shows that most creative craft industry players who have successfully implemented eco-innovation have experienced a significant increase in the competitiveness of their products, which is reflected in increased demand, wider market access, and consumer loyalty. More than 45% of businesses adopt the use of recycled materials as part of their innovation strategy, while 38% develop product designs that are easily degradable and have minimal environmental impact. However, the research also revealed a number of obstacles that still hinder the optimal implementation of eco-innovation. Capital constraints are the main obstacles faced by almost half of the respondents, which makes it difficult to invest in clean technology and production process efficiency. In addition, the lack of in-depth knowledge of eco-innovation and the lack of support from government policies make some actors hesitant to change their traditional production methods. Resistance to change highlights the necessity for intensified education and training to facilitate broader adoption of eco-innovation strategies within the creative industries.

The study also found that collaboration with local communities and the involvement of various stakeholders are important factors in the successful implementation of eco-innovation. Industry players who collaborate with communities and educational institutions often gain access to new knowledge, resources, and technical support that make it easier for them to innovate in an environmentally friendly manner. With this approach, the product not only meets the environmental aspect but also raises the value of local culture, which is increasingly appreciated in the global market. The ability to adapt to market trends that prioritize sustainability makes creative craft business actors better prepared to face increasingly fierce competition, as well as contribute positively to environmental conservation. This research underscores the importance of effective communication and marketing strategies to educate consumers about the added value of environmentally friendly products. Many business actors realize that without consumer awareness, product advantages in terms of eco-innovation are difficult to optimize to increase competitiveness. Therefore, an

integrated implementation strategy focuses not only on technical and production aspects but also on building a brand image that prioritizes sustainability. Digital platforms and social media serve as important channels for disseminating information and attracting a broader, more diverse market.

The results of the study also show that creative craft industry players who are able to combine product innovation with sustainable business practices demonstrate better environmental performance, including waste reduction, enhanced energy efficiency, and more efficient resource use. This not only supports global environmental goals but also lowers long-term production costs and increases business profitability. Thus, the eco-innovation implementation strategy has a positive dual impact on improving the environment while strengthening the competitive position of business actors in the market.

Thus, the eco-innovation implementation strategy is the key for Indonesian creative craft industry players in overcoming current economic and environmental challenges (Nirwal & Bhardwaj, 2025). Sustained support from governments, educational institutions, and the private sector is essential to provide access to capital, training, technology, and policies that encourage green innovation (Andriamanantena et al., 2025). These measures will enhance the resilience of Indonesia's creative craft industry, enabling it to compete effectively on the global stage while protecting the environment and preserving local culture as an added value. This research paves the way for further studies to deepen the understanding of the implementation of eco-innovation at various scales of business and evaluate its long-term impact on the social and economic well-being of creative communities (Awuah-Gyawu et al., 2025).

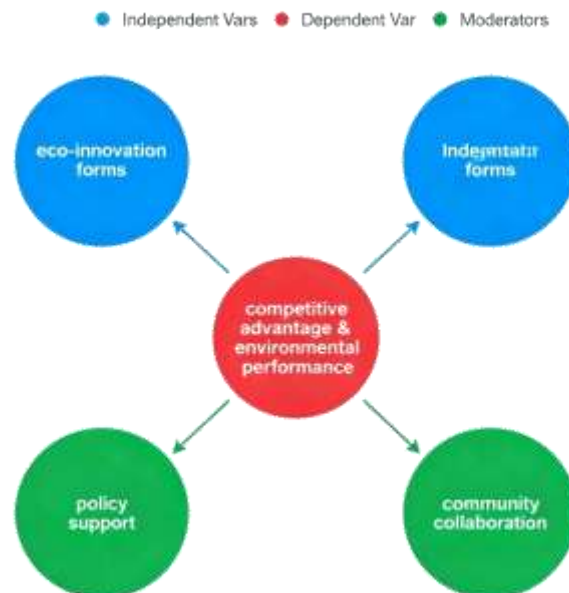


Figure 1. Conceptual models

The relationship between free variables, bound variables, and moderator variables in the context of eco-innovation implementation strategies in the

Indonesian creative craft industry. The free variables in this model are forms of eco-innovation, which include the use of recycled materials, environmentally friendly product design, as well as waste reduction, and the use of renewable energy. This variable affects the bound variables, namely, the competitive advantage and the environmental performance of creative craft industry players. The two moderator variables that play a role are government policy support and community collaboration, which function to strengthen or moderate the influence of eco-innovation on industrial performance results(Kuzmina et al., 2025).

Thus, in accordance with these findings, various forms of eco-innovation can increase the competitiveness and environmental performance of creative businesses, but their success is highly dependent on external factors such as policies that facilitate access to green technology and collaboration between industry players and communities, academics, and the government(Poznańska & Pniewska, 2025). This model adopts the principles of the Resource-Based View and Triple Helix Innovation System, where internal innovation (eco-innovation) needs to be supported by external networks to maximize impact. Therefore, in developing an eco-innovation implementation strategy, it is important to not only focus on product and process innovation but also actively manage external factors to create an innovation ecosystem conducive to the sustainable growth of Indonesia's creative craft industry.

IV. CONCLUSION AND RECOMMENDATIONS

This study concludes that the eco-innovation implementation strategy has a very important role in improving competitive advantage and environmental performance in creative craft industry players in Indonesia. The forms of eco-innovation applied, such as the use of recycled materials, environmentally friendly product design, waste reduction, and the use of renewable energy, have proven to be effective in providing added value for products while supporting environmental conservation. However, the success of implementation is also greatly influenced by external factors such as government policy support and collaboration with the community, which are important elements in creating a conducive innovation ecosystem. Obstacles such as limited capital, lack of technical knowledge, and resistance to change must be a concern for all stakeholders so that these environmentally friendly innovations can be optimized more widely.

The implications of this research lead to the need to strengthen synergy between industry players, governments, academics, and the community to support the adoption of eco-innovation systematically and sustainably. The government is expected to provide adequate policies and incentives, including technical training and easy access to financing for micro and small business actors. In addition, capacity building for industry players through education and correctional services on the importance of green innovation must be included in the priority agenda. The education sector and research institutions can also play

a role in supporting the development of environmentally friendly technology and business models. With an integrated implementation and supported by all stakeholders, the creative craft industry in Indonesia will not only be able to face global competition but also contribute significantly to sustainable development and environmental conservation, strengthening an inclusive and responsible creative economy ecosystem.

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