

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

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ABSTRACT: This study aims to examine the influence of green markets on green entrepreneurship by considering the role of environmental dynamism as a moderating variable in the Small and Medium Enterprises (SMEs) sector in Indonesia. The concept of green entrepreneurship prioritizes environmentally friendly products and production innovation to support business sustainability and maintain environmental sustainability. Through data analysis from 105 respondents engaged in sustainable business practices, the results show that green products and green production have a positive and significant impact on green entrepreneurship. However, environmental dynamism has not been proven to moderate the relationship between green products, green production, and green entrepreneurship. This finding suggests that while environmental dynamism is crucial in the context of rapid external change, internal company factors such as environmentally friendly products and production innovations are more significant determinants of green entrepreneurship development in Indonesia. This study contributes to the understanding of how SMEs can optimize green entrepreneurship practices in the face of increasingly complex global challenges.

KEYWORDS: Green entrepreneurship, Green market, Environmental dynamism

I. INTRODUCTION

In recent years, attention to environmental sustainability has increased significantly, particularly in the economic and entrepreneurial sectors. In response to the need for environmentally sustainable growth, companies face constant pressure to care for the natural environment by taking proactive measures against environmental degradation and the depletion of natural resources (Amankwah & Sesen, 2021). This requires businesses to focus not only on financial profitability but also on considering the social and environmental impacts of their operations (Gürses et al., 2021; Mulej & Hrast, 2023). In response to this challenge, there is a growing demand for businesses to develop environmentally friendly products and integrate sustainability factors into their business models, giving rise to the concept of the "green market" (Sharma & Kushwaha, 2015). The emergence of a green market requires products to reflect a commitment to the environment in order to achieve a competitive advantage. This has opened new opportunities and encouraged the emergence of the concept of green entrepreneurship, as expressed by Lutfi et al. (2018).

This research is based on Green Theory, which emerged in 1972 in response to growing concerns about the stability of the natural balance (Arı & Gökpınar, 2020). In this context, green entrepreneurship has evolved into a new paradigm recognized globally in recent years (Soomro et al., 2020). Green entrepreneurship makes significant contributions to environmental protection, including the preservation of natural ecosystems, reduction of deforestation, enhancement of environmental quality, and promotion of sustainable development (Amankwah & Sesen, 2021). This approach focuses explicitly on developing environmentally friendly products and services that meet social and ecological needs, while encouraging sustainable business practices.

However, the implementation of sustainable business practices is still relatively new, especially for Small and Medium Enterprises (SMEs) in Indonesia. SMEs often face numerous challenges, including high operational costs associated with sustainability management, which means that not all SMEs can afford to adopt these practices (Omar & Samuel, 2011). Therefore, integrating environmental sustainability into SME operations is crucial for minimizing adverse environmental impacts. One concrete example of the implementation of sustainable business practices can be seen in SMEs that produce environmentally friendly products spread across Indonesia and have implemented sustainable business principles in their operations. The existence of green SMEs in Indonesia can adopt and develop sustainable business practices that are oriented towards global competitiveness

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

while preserving the environment.

In this context, green entrepreneurship and green markets emerged in response to increasing global pressures. These pressures include consumer demand for sustainable products, government regulations that encourage environmentally friendly business practices, and public expectations for an improved quality of life through the creation of a healthy and sustainable environment. Furthermore, the ever-changing external environment (environmental dynamism) demands a high degree of adaptability from SMEs. SMEs are required not only to adapt quickly to market and regulatory changes but also to proactively integrate sustainability principles into their business strategies to maintain competitiveness and business continuity amidst increasingly complex global changes.

Environmental dynamism is crucial for formulating adaptive and innovative business strategies, particularly for businesses seeking to maintain competitiveness in an evolving market environment. High levels of uncertainty in economic, social, technological, and regulatory environments necessitate that companies develop responsive and flexible strategic decision-making capabilities. In such situations, the competitive advantage achieved by companies tends to be temporary if not accompanied by ongoing adaptation efforts to environmental changes (J. Wu et al., 2020; Yunita et al., 2023).

Increasing consumer awareness of environmental issues has driven behavioral changes in purchasing decisions, particularly toward products considered environmentally friendly. These changes not only influence individual preferences but also shape positive collective perceptions of green products (Soomro et al., 2024). Therefore, this study aims to examine the concept of the green market in relation to green entrepreneurship and environmental dynamism as moderating variables that influence the relationship between the green market and green entrepreneurship in green SMEs that implement environmentally friendly and sustainable practices.

Environmental dynamism refers to external business conditions characterized by high levels of uncertainty, rapid change, and complexity. In such situations, companies face the challenge of continuously adapting to maintain their performance and business sustainability (Andrade et al., 2021; Tajeddini & Mueller, 2019). High levels of uncertainty in economic, social, technological, and regulatory aspects necessitate that companies develop responsive and flexible capabilities in strategic decision-making. Furthermore, environmental dynamics also exacerbate challenges related to technological capacity and increased market competition. In this context, the competitive advantage achieved by companies tends to be temporary if not accompanied by ongoing adaptation efforts to environmental changes (J. Wu et al., 2020; Yunita et al., 2023). Therefore, understanding environmental dynamism is crucial in formulating adaptive and innovative business strategies, especially for businesses seeking to maintain competitiveness amidst evolving market uncertainty.

II. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Green Theory

Fundamentally, Green Theory promotes a unified moral perspective known as the green theory of values, which is independent of specific political or organizational interests. This theory emphasizes the importance of an ethical approach oriented toward ecological sustainability, where the protection of non-human nature is a top priority (Arı & Gökpinar, 2020). Therefore, Green Theory emphasizes the importance of collective action that transcends mere national interests in response to global challenges with widespread impacts worldwide (Dyer, 2017).

Green Market, Green Entrepreneurship and Environmental Dynamism

The green concept emerged in response to the negative impacts of business activities on the environment and is seen as an alternative solution to various ecological problems facing the business world (Lutfi et al., 2018). This phenomenon has triggered the emergence of the green market and encouraged the emergence of new managerial concepts such as green supply chain management and waste management. New green product innovations and developments are emerging within the green marketing concept. Entrepreneurs continually focus their attention on innovative ideas (Lutfi et al., 2018). Therefore, it can be said that companies that incorporate the term "green" into their marketing mix are making very wise and up-to-date decisions that will yield profitable results both now and in the future (Abdollahzadeh & Sharifzadeh, 2014).

Previous research has highlighted that green entrepreneurship is grounded in ecological concerns and market opportunities (Tien et al., 2023), and that it can drive innovation and lead to the development of new markets (Soomro et al., 2024). Furthermore, businesses that adopt green entrepreneurship practices tend to perform better in terms of business sustainability (Schaltegger & Wagner, 2011). Green entrepreneurship develops innovative products and solutions to address environmental issues (York & Venkataraman, 2010). Therefore, based on the findings presented by Sharma and Kushwaha (2015), the green market dimensions consist of green products, green design, green supply chains, and green production. However, in this study, green products and green production are used in SME innovation, so the following hypothesis is formulated:

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

Hypothesis 1: Green products have a positive impact on green entrepreneurship

Hypothesis 2: Green production has a positive impact on green entrepreneurship

Several studies also suggest that high environmental dynamism poses challenges for companies in maintaining operational stability, as rapidly changing environmental conditions require a greater degree of flexibility and adaptability from organizations (Schilke, 2014). Furthermore, environmental dynamism also has the potential to influence the effectiveness of implementing sustainable practices within an organization (Chan et al., 2016).

Understanding and managing environmental dynamism is a crucial aspect in strengthening green entrepreneurship for its continued growth. A dynamic environment is characterized by high uncertainty due to changes in regulatory frameworks, fluctuations in market demand, technological advances, and limited natural resources (Ahmed et al., 2022; Deng et al., 2021). This uncertainty is often triggered by increasingly complex competitive dynamics and rapidly changing consumer preferences, particularly in the context of sustainable products and services. Facing such environmental issues, SMEs are required to respond adaptively and innovatively. Increased consumer awareness of environmental issues has driven behavioral changes in purchasing decisions, particularly for products considered environmentally friendly. This research contributes to the important role of environmental dynamism as a moderating variable in the relationship between green markets and green entrepreneurship in SMEs in Indonesia. Therefore, the formulation of the hypothesis in this study is explained as follows:

Hypothesis 3: Environmental dynamism moderates the relationship between green product and green entrepreneurship.

Hypothesis 4: Environmental dynamism moderates the relationship between green production and green entrepreneurship.

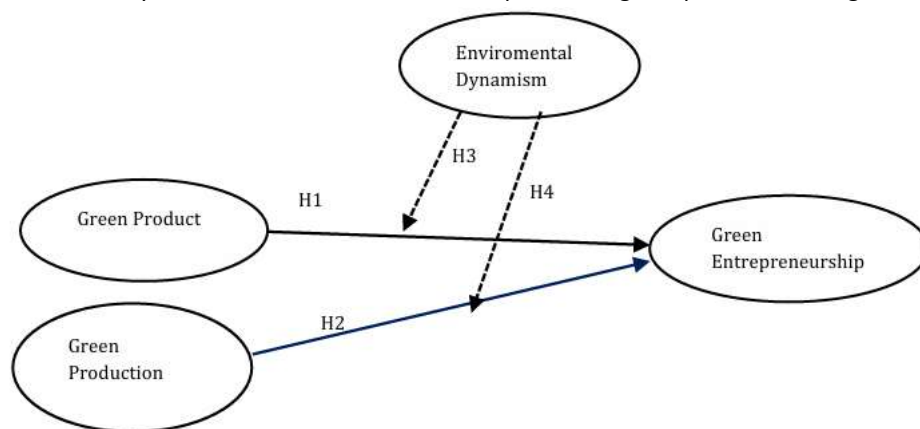


Figure 1. Research Model Framework

III. METHODS

Data Collection

Data collection in this study was categorized based on the product categories of SMEs that have implemented sustainable business practices, such as products made from recycled waste, organic raw materials, or biodegradable materials. Given the SMEs' locations across Indonesia, the questionnaire was distributed online using a 5-point Likert scale. Of the 342 business owners surveyed, only 105 respondents returned the questionnaire and met the criteria for further analysis.

This study involved 105 SME respondents from various business sectors in Indonesia, with the largest composition coming from the food and beverage sector (41.90%), followed by the crafts and creative industries sector (18.09%) and the retail/shops sector (17.14%). Most respondents had an annual turnover of more than 2.5 billion (76.19%), which indicates that many of the SMEs involved in this study have a reasonably large business scale. In terms of workforce size, the majority of these SMEs had 5-19 employees (56.19%), while another 43.81% had 20-99 employees. The ages of respondents varied, with the 18-30 age group dominating (50.48%), followed by the 31-40 age group (29.52%), and older age groups, including 41-50 years and >51 years, each accounting for 9.52% and 10.48%, respectively. In terms of business experience, the majority of SMEs have been operating for 6-10 years (43.81%), indicating that many of them have sufficient experience in running a business. In terms of education, the majority of respondents have a senior secondary/diploma education background (59.05%), with some having postgraduate education (5.71%) and doctoral degrees (1.94%). Geographically, respondents are spread across various regions of Indonesia, with the most significant proportion coming from DI Yogyakarta (26.67%), followed by West Java (15.24%) and Central Java (14.29%). The distribution of respondents covering various business sectors, education levels, experience, and geographic locations provides a comprehensive picture of the characteristics of SMEs involved in sustainable business practices in Indonesia.

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

Table 1. Demographic Profile

Type of SMEs	(%)
Food and beverage	41.90
Craft and Creative Industries	18.09
Services	6.67
Agriculture/Farming/Livestock	10.48
Fisheries and Marine	2.86
Recycling/Waste Processing	2.86
Retail/Store	17.14
Annual Revenue	
300 milyar – 2.5 milyar	23.81
>2.5 milyar	76.19
Number of employees	
5-19	56.19
20-99	43.81
Ages	
18-30	50.48
31-40	29.52
41-50	9.52
>51	10.48
Number of years operating	
1-5	22.86
6-10	43.81
11-15	16.19
16-20	10.47
>20 years	6.67
Education Level	
Middle School	0.95
High School	32.35
Senior Secondary and Diploma	59.05
Certificates/Graduation	
Post Graduation Level	5.71
Doctorate Degree	1.94
Geographical Distribution	
Jawa Timur	13.33
Jawa Barat	15.24
Jawa Tengah	14.29
DI Yogyakarta	26.67
DKI Jakarta	2.86
Sumatera Barat	11.43
Type of SMEs	(%)
Sumatera Utara	5.71
Riau	3.81
Bengkulu	3.81
Lampung	2.86

Source: Data processed by SPSS

Data analysis

Measurement Model Assessment

The collected data were analyzed using Structural Equation Modeling Partial Least Squares (SEM-PLS) to examine the

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

influence of green markets on green entrepreneurship. The measurement model assessment in Partial Least Squares (PLS), as described by Haryono, (2017), involves two main stages: outer model assessment and inner model assessment. In the first stage, the outer model evaluation aims to ensure that the indicators used to measure the latent variables have adequate validity and reliability. This includes testing for reliability, composite reliability, average variance extracted (AVE), as well as discriminant validity and convergent validity. According to Hair et al. (2011), a loading factor value that is considered safe and acceptable for indicators in the measurement model is above 0.7. This value indicates that the indicator has a strong relationship with the latent variable being measured. In this study, as shown in Table 2, loading factor values of 0.5 to 0.7 are still acceptable (Ghozali & Latan, 2015).

Next, the reliability of the construct is assessed using Cronbach's alpha and the composite reliability index. Then, the presence of convergent validity is verified through the average variance extracted. The results indicate that the composite reliability exceeds the critical threshold of 0.8 for all variables (Nunnally & Bernstein, 1994), and the average variance extracted is above 0.5 (Fornell & Larcker, 1981), confirming both reliability and convergent validity (see Table 2).

The evaluation of the measurement model involves verifying the presence of discriminant validity. To confirm the discriminant validity of the constructs in this study, we first apply the criterion proposed by Fornell and Larcker (1981), which states that the square root of the AVE should be greater than the correlation between constructs. Seperti yang bisa dilihat pada table 3 bahwa validitas diskriminan dalam hasil penelitian ini juga tercapai sesuai dengan kriteria Fornell-Larcker. As shown in Table 3, the discriminant validity in the results of this study was also achieved according to the Fornell-Larcker criteria.

In the second stage, the inner model evaluation is carried out in two steps. The first step is to assess the structural model to test the significance of the relationships between constructs using path coefficients and t-tests or critical ratios (CR) obtained through bootstrapping. The second step is to evaluate the R-squared, which measures the proportion of variability explained by the model (as shown in Table 4).

Table 2. Measurement model, reliability and validity assessments

	Factor Loading	Cronbach alpha	CR	AVE
Green Product		0.821	0.842	0.594
GEP1	0.823			
GEP2	0.845			
GEP3	0.839			
GEP4	0.775			
	Factor Loading	Cronbach alpha	CR	AVE
GEP5	0.525			
Green Production		0.863	0.869	0.646
GPN1	0.805			
GPN2	0.816			
GPN3	0.843			
GPN4	0.768			
GPN5	0.785			
Enviromental Dynamism		0.825	0.831	0.588
EDY1	0.763			
EDY2	0.797			
EDY3	0.709			
EDY4	0.796			
EDY5	0.765			
Green Entrepreneurship		0.846	0.854	0.620
GEN1	0.738			
GEN2	0.793			
GEN3	0.712			
GEN4	0.855			
GEN5	0.831			

Source: Data processed by SmartPLS

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

Table 3. The discriminant validity criterion test by Fornell and Larcker.

	Enviromental dynamism	Green entrepreneurship	Green product	Green production
Enviromental dynamism	0.767			
Green entrepreneurship	0.710	0.788		
Green product	0.654	0.673	0.771	
Green production	0.718	0.799	0.766	0.804

Data processed by SmartPLS

Structural Model Assessment

The adjusted R-squared value of 0.712 indicates that approximately 71.2% of the variation in the Green Entrepreneurship variable can be explained by the exogenous variables used in the model. In other words, the model used can describe most of the factors that influence Green Entrepreneurship.

Table 4. R square (R2) value of construct.

	R-square	R-square adjusted
Green entrepreneurship	0.725	0.712

Data processed by SmartPLS

Based on the results of hypothesis testing, it was found that the results of H1, H2, and H3 (see Table 5) were accepted. From table 5 above, it is proven that there is a positive and significant influence of GEP on GEN ($\beta = 0.308$, $t = 2.043$, $p < 0.05$), followed by GPN which has a significant influence on GEN ($\beta = 0.371$, $t = 2.460$, $p < 0.05$), while H3 and H4 are rejected because EDY is proven not to moderate the influence of GEP and GPN on GEN ($\beta = 0.245$, $t = 1.168$, $p > 0.05$), ($\beta = 0.308$, $t = 1.693$, $p > 0.05$).

Table 5. Hypotheses testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Result
Green product -> Green entrepreneurship	0.308	0.320	0.151	2.043	0.041	Supported
Green production -> Green entrepreneurship	0.371	0.335	0.151	2.460	0.014	Supported
Enviromental dynamism x Green product -> Green entrepreneurship	0.245	0.190	0.209	1.168	0.243	Rejected
Enviromental dynamism x Green production -> Green entrepreneurship	-0.308	-0.268	0.182	1.693	0.091	Rejected

Data processed by SmartPLS

IV. DISCUSSION

This study demonstrates that the impact of the growing green market on green entrepreneurship is positive and significant. Furthermore, the impact of green products, green production, and environmental dynamism on green entrepreneurship is positive and significant, except for the moderating relationship, where environmental dynamism does not moderate the relationship between green products and green production on green entrepreneurship. This study demonstrates that green products influence green entrepreneurship; therefore, the results of the first hypothesis are accepted. This study's findings align with previous research (Soomro et al., 2024), which explains that green products have a positive and significant influence on green entrepreneurship.

Consumer awareness of sustainable products and the public's expectation to improve the quality of life through the creation of a healthy environment encourage business actors to implement environmentally friendly business practices, thus the production process is carried out by environmentally friendly principles. The majority of respondents considered the production

Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

process carried out by environmentally friendly principles. Other findings that align with this research include studies by Sharma & Kushwaha (2015) and Lutfi et al. (2018), which explain that green products significantly contribute to the development of green entrepreneurship. Environmentally friendly green products form the foundation for green entrepreneurship, as they offer high added value in the context of sustainability and growing market opportunities. Thus, green products provide business opportunities for entrepreneurs to innovate and introduce new environmentally friendly solutions to the market, especially.

The study findings in support of the second hypothesis indicate that green production has a positive and significant impact on green entrepreneurship. The practice of green entrepreneurship requires green business actors to consistently commit to maintaining environmental sustainability in the production of goods or services. Furthermore, the production process must be designed to minimize the potential for environmental damage at every stage of production. This is in line with research findings (Soomro et al., 2024) and (Lutfi et al., 2018), which show that green business actors' significant commitment to the environment is demonstrated in the manufacture of products to support green trade, the application of environmentally friendly technologies to protect human health, and also reduce the potential for environmental damage. Green production also has a significant positive effect on green entrepreneurship (Sharma & Kushwaha, 2015). Environmentally friendly production processes, such as the use of clean technology and emission reduction, are crucial for entrepreneurs seeking to enter the green market. Therefore, green production is a factor supporting green entrepreneurship and increasing product competitiveness in the global market.

The findings of the third and fourth hypotheses explain that the level of environmental change and uncertainty does not significantly strengthen or weaken the influence of green products and green production practices on green entrepreneurship. Although in recent years, the way goods and services are produced has undergone significant changes due to market or technological developments, as well as government regulations and policies related to business that frequently change and have a significant impact on business activities, this does not appear to significantly strengthen or weaken the influence of green product and green production practices on green entrepreneurship in the development of SMEs in Indonesia. Green SMEs focus more on product innovation based on the company's capabilities, rather than solely due to rapid external changes in the environment. This aligns with the findings of Yu et al. (2022), which show that companies rely more on their internal capabilities to respond to market or technological changes, rather than simply waiting for the influence of rapid environmental dynamics.

This finding is inconsistent with the results of a study by Li et al. (2018), which showed that although market dynamics can influence business decisions, companies engaged in green entrepreneurship are more often guided by environmental regulations and long-term strategies focused on sustainability, rather than solely responding to the immediate influence of market or technological changes. Similarly, the findings of Chan et al. (2016) suggest that environmental dynamism moderates the relationships between green product innovation, cost efficiency, and firm profitability. Companies need to consider these dynamic factors when designing or producing innovative green products. This is important because rapid environmental changes can help companies improve cost efficiency and profitability. Changes in the external environment can create opportunities for companies to adopt new technologies, respond to evolving customer preferences, and utilize more efficient supply chains, which in turn support green product innovation and improve company profitability.

V. CONCLUSION

This study examines the influence of green markets on green entrepreneurship by considering the role of environmental dynamism as a moderating variable in the Indonesian SME sector. Based on the results of hypothesis testing, it was found that green products and green production have a positive and significant influence on green entrepreneurship. Environmentally friendly products and production significantly contribute to the development of green entrepreneurship in Indonesia. Environmental dynamism was not found to moderate the relationship between green products, green production, and green entrepreneurship. This means that although environmental dynamism is crucial in dealing with uncertainty, its influence on the development of green entrepreneurship is not as strong as expected. This study suggests that SMEs focusing on green product innovation and environmentally friendly production have a significant opportunity for growth. Although external factors, such as environmental dynamism, do not always have a direct influence, companies must develop strong internal capabilities to face challenges and capitalize on existing market opportunities.

This research provides a foundation for further study on the influence of environmental dynamism on SMEs business strategies, particularly in the context of green entrepreneurship. Further research is needed that examines the internal factors influencing the implementation of green entrepreneurship, particularly in the Indonesian SME sector. Policies that support the adoption of environmentally friendly products and production among SMEs, for example, through incentives or easier access to green technology, are needed.

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Green Market and Environmental Dynamism for Green Entrepreneurship in SMEs

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