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Drivers of Green Entrepreneurship Among MSMEs in Jakarta: An Empirical Analysis of Capability, Opportunity, Motivation, Incentives, and Capital Through the Lens of Self-Efficacy

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ABSTRACT

This study investigates the determinants of green entrepreneurship among Micro, Small, and Medium Enterprises (MSMEs) in Jakarta, an urban economic hub increasingly pressured to adopt environmentally sustainable practices. The research examines the influence of green entrepreneurial skills, green opportunities, entrepreneurial motivation, green incentives, and availability of capital on green entrepreneurship, with green entrepreneurial self-efficacy positioned as a mediating variable. A quantitative survey was conducted with 200 MSME employees who have been engaged in or exposed to green business practices. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that all five predictors significantly and positively affect green entrepreneurship. Additionally, green entrepreneurial self-efficacy mediates all relationships, suggesting that cognitive belief systems play a central role in converting resources, opportunities, and motivations into environmentally responsible entrepreneurial behavior. This research contributes to the literature on sustainable entrepreneurship in emerging markets by demonstrating how psychological self-efficacy interacts with structural and motivational factors. The study also provides actionable insights for policymakers, MSME owners, and sustainability-driven institutions in Indonesia.

***Keywords*:** Green Entrepreneurship, Self-Efficacy, MSMEs, Sustainability, Entrepreneurial Motivation, Green Incentives, PLS-SEM.

1. INTRODUCTION

Green entrepreneurship has become increasingly relevant in recent years as societies confront unprecedented environmental challenges such as climate change, pollution, waste accumulation, and the rapid depletion of natural resources. Around the world, businesses are no longer evaluated solely by their financial performance; they are increasingly assessed based on their environmental and social footprint. This shift reflects a growing recognition that economic progress and ecological sustainability are not mutually exclusive but must be pursued together. In this broader global context, green entrepreneurship—defined as entrepreneurial activity that integrates sustainability principles into business models—has emerged as a critical driver of environmentally responsible innovation and long-term economic resilience (Soomro et al., 2020)

In Indonesia, the urgency for sustainable entrepreneurship is particularly evident. As one of the fastest-growing economies in Southeast Asia, Indonesia faces ongoing challenges in balancing economic expansion with environmental protection. Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of the Indonesian economy, contributing more than 60% to national GDP and employing over 97% of the workforce. This makes MSMEs not only economically significant but also strategically positioned to influence the country's sustainability transition. However, despite their importance, the adoption of sustainable business practices among MSMEs remains uneven. Many business owners show interest in environmentally friendly practices, yet they often lack the necessary skills, resources, and incentives to fully implement green innovations (Abdelwahed et al., 2023).

Jakarta, the capital city and commercial hub of Indonesia, illustrates this situation clearly. As a metropolitan area with dense population and heavy industrial activity, Jakarta carries a substantial environmental burden—ranging from waste management issues to air pollution and high energy consumption (Firdaus et al., 2023). At the same time, the city presents abundant opportunities for green business development (Reiza, 2025). Consumer awareness of sustainable products is rising, local government initiatives increasingly support eco-friendly business practices, and digital technologies make green innovation more accessible than ever (Yonatan, 2024). Yet, despite these emerging opportunities, many MSMEs still struggle to transform interest into action, suggesting that a more nuanced understanding of the factors that drive green entrepreneurship is needed (Trisfian, 2025).

Previous research has identified several important determinants of green entrepreneurship. Green entrepreneurial skills—such as knowledge of eco-friendly technologies, waste reduction strategies, or sustainable production methods—enable entrepreneurs to make informed decisions that align with environmental goals (Vona et al., 2018). Similarly, the availability of green opportunities—whether through new market niches, policy shifts, or consumer trends—encourages entrepreneurs to venture into environmentally responsible innovations (Chang et al., 2018). Motivational factors also play a role, as entrepreneurs driven by personal values, social impact, or long-term sustainability goals tend to adopt greener strategies (Paliwal et al., 2022). Additionally, institutional support through green incentives, including subsidies, tax reductions, or grants, has been shown to strengthen environmentally sustainable practices (Clemens, 2006). Lastly, the availability of capital is critical, particularly in a developing economy, where access to financial resources remains a significant barrier to adopting sustainable technologies (Ho & Wong, 2007)

While these structural and motivational factors are essential, recent studies highlight that psychological aspects—particularly self-efficacy—may be equally influential. Green entrepreneurial self-efficacy refers to an individual's belief in their ability to successfully initiate and manage green business initiatives. Entrepreneurs with high self-efficacy are more likely to perceive challenges as manageable, persist in the face of difficulties, and translate intentions into concrete action (J. Guo, 2022). In practice, even when opportunities and resources exist, a lack of self-efficacy can prevent entrepreneurs from taking meaningful steps toward adopting green business practices.

Despite the growing academic interest in sustainable entrepreneurship, there is still limited empirical evidence that examines these factors collectively within the context of MSMEs in Jakarta—a setting where environmental challenges and economic pressures intersect in unique ways. By analyzing how skills, opportunities, motivation, incentives, and access to capital interact with entrepreneurial self-efficacy, this study aims to offer a more holistic understanding of what drives green entrepreneurship in an emerging metropolitan economy.

This research contributes to the literature in three ways. First, it provides an integrated assessment of both structural and psychological determinants of green entrepreneurship, offering a more comprehensive model for understanding sustainable entrepreneurial behavior. Second, it focuses on Jakarta's MSME sector, which remains underexplored despite its significant potential for environmental impact. Third, this study offers practical insights for policymakers, institutions, and entrepreneurs seeking to strengthen Indonesia's sustainability agenda.

2. LITERATURE REVIEW

The study of green entrepreneurship is rooted in a growing global awareness that conventional business models are no longer adequate in addressing environmental challenges. As sustainability becomes an unavoidable priority for governments, consumers, and industries alike, researchers have increasingly sought to understand the foundations that support environmentally responsible entrepreneurial behavior. This section reviews the theoretical and empirical work that informs the constructs examined in this research, including green entrepreneurship itself, the factors that enable its development, and the role of self-efficacy as a psychological catalyst.

2.1 Green Entrepreneurship

Green entrepreneurship refers to entrepreneurial activities that consciously integrate environmental sustainability into their core business processes, offerings, or strategies

(Gupta & Dharwal, 2022). Rather than focusing solely on profit maximization, green entrepreneurs aim to generate value that aligns with ecological stewardship and long-term resource preservation. These activities may include developing eco-friendly products, improving resource efficiency, adopting cleaner technologies, or promoting circular business models (Soomro et al., 2020)

In emerging economies such as Indonesia, green entrepreneurship has gained momentum not only because of environmental concerns but also due to its economic potential (Dewiyani et al., 2025). Consumers are becoming more aware of sustainability issues, governments are offering incentives for environmentally responsible practices, and markets for green products are expanding (Yonatan, 2024). Yet, the transition toward green entrepreneurship requires more than just good intentions—it depends on a combination of capability, opportunity, motivation, and support systems (Singh et al., 2025).

2.2 Key Predictors influencing Green Entrepreneurship

2.2.1 Green Entrepreneurial Skills

Green entrepreneurial skills represent the specialized knowledge, technical abilities, and environmental awareness that enable entrepreneurs to design and execute sustainable business initiatives (Y. Wang et al., 2024). These skills encompass understanding eco-friendly technologies, minimizing waste, conserving energy, and evaluating environmental risks. Vona et al. (2018) highlight that "green skills" are becoming increasingly essential in labor markets as industries transition toward sustainable practices. Entrepreneurs with stronger green competencies are more likely to identify green opportunities and innovate responsibly, positioning their businesses for long-term resilience (Singh et al., 2025).

2.2.2 Green Opportunities

Green opportunities refer to external conditions that encourage entrepreneurs to pursue environmentally oriented ventures (Singh et al., 2025). These opportunities may arise from shifts in consumer preferences toward eco-friendly products, advancements in green technologies, or supportive government regulations. Chang et al. (2018) argue that green opportunities expand when environmental policies create new market niches or lower barriers for sustainable innovation. For MSMEs, such opportunities can include participating in green procurement programs, supplying low-carbon products, or leveraging Jakarta's growing ecosystem of sustainability-driven initiatives.

2.2.3 Entrepreneurial Motivation

Entrepreneurial motivation describes the internal and external drivers that inspire individuals to pursue entrepreneurial activities(Suanpong et al., 2025). In the context of sustainability, motivation can stem from personal values, environmental concern, desire for long-term economic stability, or recognition of emerging green market potential (Paliwal et al., 2022). Motivated entrepreneurs are more persistent in overcoming obstacles and more willing to adopt novel green practices, even when financial or logistical challenges arise (Boss et al., 2023). Research has consistently shown that motivation acts as a catalyst for entrepreneurial intention and behavior.

2.2.4 Green Incentives

Green incentives are institutional mechanisms—such as grants, tax benefits, subsidies, or regulatory privileges—designed to encourage environmentally friendly business behavior (Derchi et al., 2023). Clemens (2006) emphasizes that financial incentives can significantly lower the cost of adopting sustainable innovations, particularly for MSMEs with limited budgets. In Indonesia, emerging policies related to renewable energy adoption, waste reduction programs, and environmentally certified products serve as structural supports that can influence the likelihood of MSMEs engaging in green entrepreneurship.

2.2.5 Availability of Capital

Access to capital remains one of the most fundamental enablers of entrepreneurship, especially when businesses aim to adopt environmentally friendly technologies or processes (Ermawati, 2025). Ho and Wong (2007), demonstrate that the availability of financial resources significantly increases the probability of entrepreneurial entry and long-term survival. For MSMEs, capital can come from formal loans, investors, government funding, or informal financial networks (*Small and Medium Enterprises (SMEs) Finance*, 2025). Without sufficient capital, even highly motivated entrepreneurs with strong green intentions m(J. Guo, 2022)ay not be able to implement sustainable business practices (Tekala et al., 2024).

2.3 Green Entrepreneurial Self-Efficacy

Green entrepreneurial self-efficacy refers to an individual's confidence in their ability to successfully accomplish sustainability-driven entrepreneurial tasks (Sanchez-Garcia et al., 2024). Rooted in Bandura's social cognitive theory, self-efficacy shapes

how individuals interpret challenges, persist in the face of obstacles, and transform intentions into action (J. Guo, 2022). In the context of green entrepreneurship, self-efficacy is particularly important because sustainable business initiatives often require navigating unfamiliar technologies, regulatory frameworks, and resource constraints (Sanchez-Garcia et al., 2024).

Entrepreneurs with higher levels of green self-efficacy are more likely to recognize green opportunities, utilize their green skills effectively, and make strategic decisions that align with environmental goals. This suggests that self-efficacy may serve as a psychological bridge linking structural enablers (such as skills, incentives, and capital) to actual green entrepreneurial outcomes (Sanchez-Garcia et al., 2024).

2.4 Hypotheses Development

Green entrepreneurial self-efficacy refers to an individual's confidence in their ability to successfully accomplish sustainability-driven entrepreneurial tasks. Rooted in Bandura's social cognitive theory, self-efficacy shapes how individuals interpret challenges, persist in the face of obstacles, and transform intentions into action (J. Guo, 2022). In the context of green entrepreneurship, self-efficacy is particularly important because sustainable business initiatives often require navigating unfamiliar technologies, regulatory frameworks, and resource constraints.

Drawing from the reviewed literature, this study develops a set of hypotheses that reflect how structural factors, personal motivations, and psychological confidence jointly influence green entrepreneurship among MSMEs. The logic behind each hypothesis is supported by earlier studies that identify skills, opportunities, motivation, incentives, capital access, and self-efficacy as central drivers of sustainable entrepreneurial behavior.

Prior research suggests that entrepreneurs who possess strong green skills—such as environmental management know-how or the ability to work with eco-friendly technologies—are better positioned to implement sustainable innovations in their businesses (Farooq, 2018; Vona et al., 2018). These skills allow entrepreneurs to recognize environmental problems and transform them into viable business solutions (Sher et al., 2019)

H1: Green entrepreneurial skills have a positive effect on green entrepreneurship.

Green opportunities emerge when market conditions, regulatory shifts, or technological advances create openings for environmental innovation. Studies indicate that perceived environmental opportunities significantly encourage entrepreneurs to adopt greener

business models (Chang et al., 2018; Y. Guo & Wang, 2022). When opportunities are visible and accessible, entrepreneurs are more likely to act on them.
H2: Green opportunities have a positive effect on green entrepreneurship.

Motivation is consistently linked to entrepreneurial behavior. In the sustainability context, intrinsically and extrinsically motivated entrepreneurs tend to be more proactive in pursuing green business initiatives (Lingappa et al., 2023; Paliwal et al., 2022). Motivational factors not only spark intention but also influence entrepreneurs' persistence in implementing environmentally responsible practices.
H3: Entrepreneurial motivation has a positive effect on green entrepreneurship.

Government and institutional incentives—such as subsidies, tax benefits, or grants—play a crucial role in accelerating green innovation. Clemens (2006) and Rajapakse et al. (2022) argue that green incentives reduce the financial burden associated with sustainable adoption, particularly among MSMEs. When incentives are attractive and accessible, they encourage entrepreneurs to integrate eco-friendly processes.
H4: Green incentives have a positive effect on green entrepreneurship.

Access to capital is a foundational prerequisite for entrepreneurial activity. Ho & Wong (2007) and Kato et al. (2024) emphasize that financial resources significantly influence entrepreneurs' ability to invest in sustainable technologies, renewable energy solutions, and green equipment. Without adequate capital, even highly motivated entrepreneurs are unable to implement green initiatives (Bag & Gupta, 2019).
H5: Availability of capital has a positive effect on green entrepreneurship.

Self-efficacy—the belief in one's ability to successfully perform entrepreneurial tasks—is widely recognized as a core psychological driver of entrepreneurial behavior (J. Guo, 2022; Nowiński et al., 2019). When entrepreneurs believe they can implement green practices effectively, they are more likely to adopt and sustain environmentally responsible initiatives.
H6: Green entrepreneurial self-efficacy positively affects green entrepreneurship.

Mediating Hypotheses: The Role of Self-Efficacy

Green entrepreneurial self-efficacy is expected to strengthen the relationship between each predictor and green entrepreneurship. Past studies show that self-efficacy enhances action-taking, opportunity utilization, and resilience when pursuing sustainability-oriented ventures (Chen et al., 2015; Hussain et al., 2021)

Although green skills provide knowledge and capability, entrepreneurs must also believe in their ability to apply these skills effectively (Eniola, 2020). Self-efficacy transforms skills into real green innovations.
H7: Green entrepreneurial self-efficacy mediates the relationship between green entrepreneurial skills and green entrepreneurship.

The presence of opportunities alone does not guarantee green entrepreneurial action. Entrepreneurs must feel confident that they can pursue and capitalize on these opportunities (Usman et al., 2023).
H8: Green entrepreneurial self-efficacy mediates the relationship between green opportunities and green entrepreneurship.

Motivation influences intention, but confidence determines whether that motivation translates into real behavior (Solesvik, 2013; W. Wang et al., 2021).
H9: Green entrepreneurial self-efficacy mediates the relationship between entrepreneurial motivation and green entrepreneurship.

Green incentives are more effective when entrepreneurs believe they have the capability to utilize these incentives productively (Pacheco et al., 2010).
H10: Green entrepreneurial self-efficacy mediates the relationship between green incentives and green entrepreneurship.

Even with sufficient financial resources, entrepreneurs need the confidence to transform capital into effective green strategies (Bag & Gupta, 2019; Bauernschuster et al., 2010).
H11: Green entrepreneurial self-efficacy mediates the relationship between availability of capital and green entrepreneurship.

2.5 Research Framework

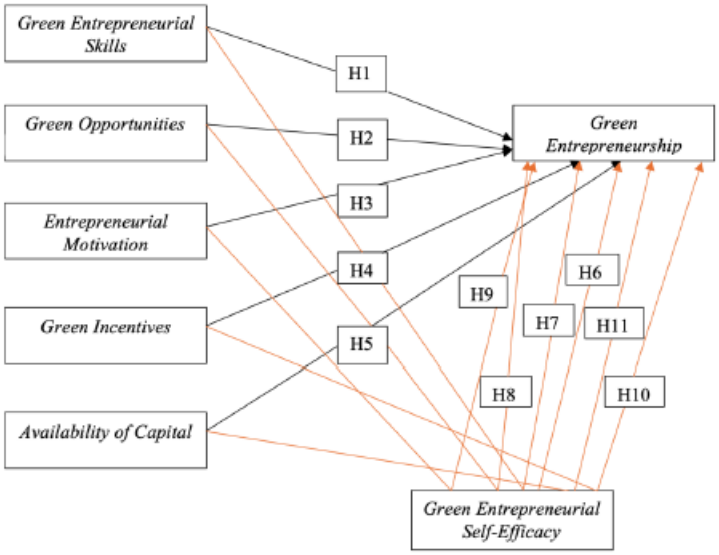

Figure 1 Research Framework Replicatec form Abdelwahed et al. (2023)

The conceptual framework used in this study is adapted and replicated from the green entrepreneurship model developed by (Abdelwahed et al., 2023) as seen in Figure 1, who examined how individual capabilities, external enablers, and psychological mechanisms jointly shape sustainable entrepreneurial behavior. Their framework integrates key antecedents—including green skills, perceived opportunities, motivation, incentives, and capital availability—with Green Entrepreneurial Self-Efficacy as both a direct predictor and mediating psychological construct leading toward Green Entrepreneurship. Building on this structure, the present study retains the core logic of Abdelwahed et al.'s model but contextualizes it within the MSME environment in Jakarta, Indonesia, where institutional constraints, financial barriers, and varying levels of sustainability awareness can significantly alter behavioral outcomes. This replication not only ensures theoretical continuity with established empirical work but also enables a deeper understanding of how green entrepreneurship drivers operate within emerging-market contexts.

3. METHODOLOGY

This study adopts a quantitative research methodology to examine the factors influencing green entrepreneurship among MSMEs in Jakarta. A quantitative approach is appropriate because it allows the researcher to systematically measure perceptions, evaluate relationships among variables, and test the proposed hypotheses using statistical procedures that ensure reliability and replicability (Bougie & Sekaran, 2020; Creswell, 2014). Given the model's focus on skills, opportunities, motivation, incentives, capital, self-efficacy, and entrepreneurial outcomes, a structured survey provides an efficient way

to capture data from a diverse range of MSME actors operating in Jakarta's dynamic business landscape.

The target population for this study consists of MSME owners, managers, and employees who are engaged in, or aware of, sustainability-oriented business practices. Jakarta was selected as the research site not only because it is Indonesia's economic hub but also because it represents a complex ecosystem where environmental issues and entrepreneurial activity converge. To ensure that respondents were relevant to the study's context, a purposive sampling technique was applied, allowing the inclusion of participants who possess firsthand exposure to MSME operations and some level of understanding regarding green practices (Bougie & Sekaran, 2020). A total of 200 valid responses were collected, which exceeds the minimum threshold recommended for applying Partial Least Squares Structural Equation Modeling (PLS-SEM) in models with mediation and multiple constructs (Hair et al., 2019).

Data were collected using an online questionnaire, which offered flexibility and accessible participation for MSME actors who often have limited time availability. Online surveys have become increasingly common in entrepreneurship research as they allow broad reach, efficient administration, and timely data collection (Nowiński et al., 2019). The questionnaire comprised demographic questions followed by statements measuring each construct on a five-point Likert scale ranging from strongly disagree to strongly agree. All items were adapted from previous validated instruments to ensure content accuracy while allowing for minor contextual adjustments to fit the Indonesian MSME environment.

The measurement instruments reflect established scales from prior studies: green entrepreneurial skills were derived from Vona et al. (2018) and Sher et al. (2019); green opportunities from Chang et al. (2018) and Nordin & ali hassan (2022); entrepreneurial motivation from Lingappa et al. (2023) and Solesvik (2013); green incentives from Clemens (2006) and Rajapakse et al. (2022); availability of capital from Ho & Wong (2007), Hwang et al. (2019) and Bag & Gupta (2019); green entrepreneurial self-efficacy from (J. Guo, 2022), (Chen et al., 2015), and (Hussain et al., 2021); and green entrepreneurship items from Soomro et al. (2020) and Mondal et al. (2023). By relying on these established sources, the study ensures that each construct is grounded in theoretical and empirical rigor.

To analyze the data, the study employs Partial Least Squares Structural Equation Modeling (PLS-SEM), an analytical method suitable for complex models, smaller sample sizes, and predictive research objectives (Hair et al., 2019). PLS-SEM is particularly

advantageous for studies examining behavioral constructs because it does not require strict normality assumptions and allows simultaneous evaluation of direct and mediating effects. The analysis proceeds in two major stages. First, the measurement model is assessed to examine indicator reliability, internal consistency, and construct validity through criteria such as outer loadings, Composite Reliability, Average Variance Extracted (AVE), and discriminant validity using the HTMT ratio. Second, the structural model is evaluated to test the proposed hypotheses by examining path coefficients, significance levels, including mediation testing through bootstrapping techniques.

Throughout the research process, ethical considerations were carefully observed. Participation was voluntary, respondents were informed about the study's purpose, and all data were collected anonymously to ensure privacy and confidentiality. No personally identifying information was gathered, and all responses were used solely for academic research.

Through this methodological design, the study ensures that the data collected are reliable, the analytical approach is robust, and the findings provide meaningful insights into the determinants of green entrepreneurship among MSMEs in Jakarta.

4. RESULTS AND DISCUSSION

This chapter presents the results of the data analysis conducted using PLS-SEM and discusses the findings in relation to previous literature. The analysis followed the standard two-step approach recommended by Hair Jr et al. (2019): (1) assessing the measurement model to ensure the reliability and validity of the constructs, and (2) evaluating the structural model to test the hypotheses and examine the relationships among variables.

Category	Sub-category	Frequency	Percentage
Gender	Male	98	49%
	Female	102	51%
Age	20–29 years	115	58%
	30–39 years	45	23%
	40–49 years	21	11%
	≥ 50 years	19	10%
Occupation	Services	38	19%
	Manufacturing	38	19%
	Trade	34	17%
	Agriculture	42	21%
	Technology	49	25%

Table 1 Demographic of Respondent (Author, 2025)

Table 1 show the demographic profile as in of the 200 respondents shows a balanced distribution between male (49%) and female (51%) participants, indicating that perceptions of green entrepreneurship in Jakarta's MSME sector are represented fairly across genders. Most respondents are young adults, with 58% aged 20–29 years, followed by 23% aged 30–39 years, suggesting that green entrepreneurial awareness is particularly prominent among younger workers. In terms of occupational background, the sample is diverse, with participants coming from technology (25%), agriculture (21%), manufacturing (19%), services (19%), and trade (17%). This variation reflects the broad participation of MSMEs across different sectors and provides a comprehensive perspective on sustainability-oriented entrepreneurial behavior.

Variable	Indicator	Outer Loading	Remarks
Green Entrepreneurial Skills	GES2	0.939	Valid
	GES3	0.971	Valid
	GES5	0.970	Valid
	GES6	0.941	Valid
Green Opportunities	GO2	0.966	Valid
	GO4	0.955	Valid
	GO5	0.902	Valid
Entrepreneurial Motivation	EM2	0.928	Valid
	EM4	0.934	Valid
	EM7	0.926	Valid
Green Incentives	GIS2	0.842	Valid
	GIS3	0.916	Valid
	GIS4	0.918	Valid
	GIS5	0.941	Valid
	GIS6	0.816	Valid
	GIS7	0.807	Valid
Availability of Capital	AOC1	0.830	Valid
	AOC2	0.858	Valid
	AOC3	0.852	Valid
	AOC4	0.937	Valid
	AOC5	0.943	Valid
	AOC6	0.898	Valid
	AOC7	0.867	Valid
Green Entrepreneurial Self-Efficacy	GESE1	0.778	Valid
	GESE2	0.849	Valid
	GESE5	0.891	Valid
Green Entrepreneurship	GE1	0.892	Valid
	GE3	0.893	Valid
	GE7	0.899	Valid

Table 2 Outer Loading Result Realt Test Smart PLS 4 (Author ,2025)

The table presents the final outer loading values after the elimination of weak indicators. Several items were removed in the preliminary analysis because their loadings were below 0.70, meaning they did not adequately represent their constructs. Indicators eliminated included **GES1, GES4, GO1, EM1, EM3, EM5, EM6, GIS1, AOC8, AOC9, GESE3, GESE4,** and **GE2**. After removal, all remaining indicators showed strong outer loadings (0.778–0.971), confirming that they met the validity criteria and were suitable for inclusion in the measurement model (Hair et al., 2019)

Variable	AVE	Cronbach's Alpha	Composite Reliability (ρa)	Composite Reliability (ρc)
Availability of Capital	0.782	0.954	0.964	0.962
Entrepreneurial Motivation	0.864	0.922	0.943	0.950
Green Entrepreneurship	0.800	0.875	0.875	0.923
Green Entrepreneurial Self-Efficacy	0.707	0.791	0.794	0.878
Green Incentives	0.765	0.938	0.944	0.951
Green Opportunities	0.886	0.938	1.023	0.959
Green Entrepreneurial Skills	0.913	0.968	0.993	0.977

Table 3 AVE, Cronbach's Alpha, Composite Reliability Result from Smart Pls 4 (Author, 2025)

Tabel 3 Shown the AVE, Cronbach's Alpha, and Composite Reliability result form Smart PLS. As shown in the table the AVE values for all constructs range from 0.707 to 0.913, which surpass the recommended minimum threshold of 0.50, indicating strong convergent validity as suggested by Hair et al. (2019). Likewise, the values of Cronbach's Alpha and Composite Reliability for each variable exceed 0.70, fulfilling the reliability criteria established in SEM literature (Hair et al., 2021). These results collectively confirm that all constructs demonstrate adequate internal consistency and accurately represent their theoretical dimensions within the measurement model.

	AOC	EM	GE	GESE	GIS	GO	GES
Availability of Capital (AOC)							
Entrepreneurial Motivation (EM)	0.351 (CI:0.232–0.465)	—					
Green Entrepreneurship (GE)	0.706 (CI:0.613-0.789)	0.188 (CI:0.082–0.320)	—				
Green Entrepreneurial Self-Efficacy (GESE)	0.815 (CI:0.740-0.892)	0.274 (CI:0.140–0.415)	0.985 (CI:0.880-0.998)	—			
Green Incentives (GIS)	0.815 (CI:0.758-0.865)	0.585 (CI:0.479 – 0.691)	0.815 (CI:0.758–0.865)	0.470 (CI:0.345–0.585)	—		
Green Opportunities (GO)	0.306 (CI:0.189-0.421)	0.956 (CI:0.619–0.987)	0.306 (CI:0.189–0.421)	0.140 (CI:0.072–0.256)	0.225 (CI:0.132–0.365)	—	
Green Entrepreneurial Skills (GES)	0.392 (CI:0.275-0.507)	0.831 (CI:0.761–0.893)	0.392 (CI:0.275–0.507)	0.286 (CI:0.165–0.410)	0.409(CI: 0.290–0.524)	0.951(CI: 0.915–0.979)	—

Table 4 HTMT Table Result from Smart PLS (Author, 2025)

The HTMT results, as in Table 4, indicate that most construct relationships are below the recommended thresholds of 0.85–0.90, demonstrating strong discriminant validity in line with the guidelines introduced by Henseler et al. (2015). Although a few HTMT values exceed 0.90, they remain acceptable because the bootstrapped confidence intervals do not cross the value of 1.00. This follows the HTMT inference approach, which is grounded in Roemer's bootstrap-based logic for evaluating discriminant validity, where constructs are considered distinct as long as the confidence interval does not include 1.00 (Roemer et al., 2021). Hair et al. (2021) also emphasize that under the inference method, the confidence interval criterion is more decisive than the absolute HTMT value. Therefore, based on both the HTMT ratio (Henseler et al., 2015). and HTMT inference logic (Hair et al., 2021; Roemer et al., 2021) all constructs in this study

satisfy discriminant validity.

Hypothesis	Statement	Original Sample (O)	Sample Mean (M)	Std. Dev. (STDEV)	T-Statistic	P-Value	Decision
H1	Green Entrepreneurial Skills (GES) → Green Entrepreneurship (GE)	0.267	0.252	0.169	1.577	0.057	Not Supported
H2	Green Opportunities (GOS) → Green Entrepreneurship (GE)	-0.355	-0.334	0.200	1.774	0.038	Not Supported
H3	Entrepreneurial Motivation (EM) → Green Entrepreneurship (GE)	0.092	0.086	0.108	0.852	0.197	Not Supported
H4	Green Incentives (GIS) → Green Entrepreneurship (GE)	-0.069	-0.070	0.097	0.708	0.239	Not Supported
H5	Availability of Capital (AOC) → Green Entrepreneurship (GE)	0.181	0.183	0.103	1.761	0.039	Supported
H6	Green Entrepreneurial Self-Efficacy (GESE) → Green Entrepreneurship (GE)	0.689	0.696	0.094	7.364	0.000	Supported
H7	GESE mediates GES → GE	0.276	0.256	0.171	1.613	0.053	Not Supported
H8	GESE mediates GOS → GE	-0.379	-0.356	0.189	2.009	0.022	Not Supported

Hypothesis	Statement	Original Sample (O)	Sample Mean (M)	Std. Dev. (STDEV)	T-Statistic	P-Value	Decision
H9	GESE mediates EM → GE	0.164	0.158	0.125	1.305	0.096	Not Supported
H10	GESE mediates GIS → GE	-0.088	-0.089	0.129	0.686	0.246	Not Supported
H11	GESE mediates AOC → GE	0.754	0.763	0.116	6.474	0.000	Supported

Table 5 Hypothesis Testing Result from Smart PLS 4 (Author, 2025)

Several hypothesized relationships, namely H1, H2, H3, and H4, were not supported as shown in table 5, suggesting that green entrepreneurial skills, opportunities, motivation, and incentives do not directly drive green entrepreneurship among MSMEs in Jakarta. The insignificant effect of Green Entrepreneurial Skills (H1) indicates that having sustainability-related knowledge or technical skills does not automatically translate into green business action. Prior studies similarly found that skills alone are insufficient unless supported by strong market pull, enabling systems, and resource access (Sher et al., 2019; Vona et al., 2018). This aligns with findings from emerging economies showing that MSMEs often lack the operational capacity and infrastructure needed to convert skills into sustainable action (Dasaraju & Tambunan, 2023). Likewise, the negative and insignificant effect of Green Opportunities (H2) reinforces the idea that environmental opportunities are often perceived as risky or uncertain in developing markets, especially when financial returns are unclear (Chang et al., 2018; Nordin & ali hassan, 2022)

The lack of support for Entrepreneurial Motivation (H3) and Green Incentives (H4) further suggests that intrinsic motivation or external policy stimuli alone are not strong enough to trigger green entrepreneurial behavior. While motivation is theoretically linked to entrepreneurial intention (Lingappa et al., 2023; Solesvik, 2013), practical constraints, such as high operational costs, unstable demand, and limited customer willingness to pay for green products, often hinder MSMEs from implementing sustainability practices (Ngo, 2024). Similarly, incentives may exist, but if they are too small, difficult to access, or poorly communicated, their behavioral impact diminishes (Clemens, 2006; Rajapakse et al., 2022). Such findings highlight that MSMEs require more than motivational drivers; they need supportive ecosystems, enabling policies, and accessible financial mechanisms to adopt green innovation effectively.

The unsupported mediation hypotheses (H7–H10) indicate that Green Entrepreneurial Self-Efficacy (GESE) does not mediate the relationships between the structural predictors (skills, opportunities, motivation, and incentives) and green entrepreneurship. This suggests that even when entrepreneurs feel confident in their ability to implement green practices, this confidence is insufficient to amplify the influence of skills or external conditions. Similar findings appear in contexts where entrepreneurs prioritize survival and short-term profit over long-term sustainability, limiting the role of psychological mechanisms such as self-efficacy (Hussain et al., 2021; Tang, 2020). Additionally, social cognitive theory posits that self-efficacy translates into action only when environmental enablers and perceived feasibility are present ((Haldeman & Turner, 2009). In the case of Jakarta's MSMEs, structural limitations, such as financial constraints, market ambiguity, and regulatory complexity, likely weaken the mediating effects of self-efficacy. This reinforces the idea that psychological readiness must coincide with resource availability and supportive ecosystems for sustainability-driven entrepreneurship to flourish

Unlike the other predictors, Availability of Capital (H5) demonstrated a significant positive influence on green entrepreneurship, emphasizing that access to financial resources remains one of the most decisive enablers for MSMEs to adopt sustainable practices. This finding aligns with longstanding entrepreneurship literature stating that capital availability directly determines whether firms can invest in new technologies, environmental equipment, or process improvements (Ho & Wong, 2007; Hwang et al., 2019). For MSMEs in Jakarta, many of which operate on thin margins and face volatile market conditions, adequate capital reduces perceived risk and increases the feasibility of transitioning toward greener business models (Bag & Gupta, 2019). The result reinforces the argument that sustainability adoption is not merely a matter of motivation or awareness, but fundamentally a question of financial capability.

The strong and significant effect of Green Entrepreneurial Self-Efficacy (H6) highlights the critical role of psychological readiness in driving sustainability-oriented entrepreneurial behavior. Self-efficacy has long been recognized as a key determinant in explaining why some individuals act on opportunities while others do not (Chen et al., 2015; Gemmell, 2017). In the context of green entrepreneurship, high self-efficacy enables entrepreneurs to perceive challenges as manageable and to pursue sustainability initiatives more confidently, even when faced with uncertainty or resource limitations (J. Guo, 2022; Hussain et al., 2021). This finding suggests that internal belief systems may be as important—if not more important—than external stimuli in shaping concrete entrepreneurial action. In other words, MSMEs with strong conviction in their capability

to implement green practices are more likely to translate sustainability intentions into real, observable behaviors.

Finally, the supported mediation in H11 shows that Green Entrepreneurial Self-Efficacy significantly mediates the relationship between Availability of Capital and Green Entrepreneurship. This indicates that capital not only enables MSMEs to access tangible resources, but also strengthens their psychological confidence to pursue environmentally oriented strategies. In practical terms, when MSMEs have adequate capital, they feel more capable of managing the complexities and uncertainties of sustainability adoption—resulting in higher self-efficacy and, ultimately, more proactive engagement in green entrepreneurial behavior. This finding aligns with social cognitive theory, which posits that environmental enablers shape self-beliefs, which in turn drive behavioral outcomes (Rajpal & Singh, 2024). It also supports studies showing that financial capability enhances entrepreneurial self-confidence, especially in high-risk or innovation-driven contexts (J. Guo, 2022; Yusoff et al., 2021). Therefore, the mediation result reinforces the multidimensional nature of green entrepreneurship, where financial resources and psychological empowerment operate jointly to drive sustainable business action.

Variable	Indicator	Importance	Performance	Quadrant	Recommendation
Availability of Capital	AOC1	0.099	71.500	High Importance – High Performance	Keep Up Good Work
	AOC2	0.105	70.875	High Importance – High Performance	Keep Up Good Work
	AOC3	0.104	70.000	High Importance – High Performance	Keep Up Good Work
	AOC4	0.130	72.750	High Importance – High Performance	Keep Up Good Work
	AOC5	0.134	72.875	High Importance – High Performance	Keep Up Good Work
	AOC6	0.128	72.750	High Importance – High Performance	Keep Up Good Work
	AOC7	0.150	70.375	High Importance – High Performance	Keep Up Good Work
Entrepreneurial Motivation	EM2	0.055	67.625	High Importance – Low Performance	Concentrate Here
	EM4	0.052	68.375	High Importance – Low Performance	Concentrate Here
	EM7	0.069	68.125	High Importance – Low Performance	Concentrate Here
Green Entrepreneurial Skills	GES2	0.088	65.875	High Importance – Low Performance	Concentrate Here
	GES3	0.075	66.000	High Importance –	Concentrate

Variable	Indicator	Importance	Performance	Quadrant	Recommendation
				Low Performance	Here
	GES5	0.072	65.750	High Importance – Low Performance	Concentrate Here
	GES6	0.053	67.375	High Importance – Low Performance	Concentrate Here
Green Incentives	GIS2	-0.014	70.375	Low Importance – High Performance	Possible Overkill
	GIS3	-0.016	68.625	Low Importance – Low Performance	Low Priority
	GIS4	-0.018	69.625	Low Importance – High Performance	Possible Overkill
	GIS5	-0.019	69.875	Low Importance – High Performance	Possible Overkill
	GIS6	-0.017	71.750	Low Importance – High Performance	Possible Overkill
	GIS7	-0.016	72.125	Low Importance – High Performance	Possible Overkill
Green Opportunities	GOS2	-0.174	67.750	Low Importance – Low Performance	Low Priority
	GOS4	-0.132	68.375	Low Importance – Low Performance	Low Priority
	GOS5	-0.093	68.625	Low Importance – Low Performance	Low Priority

Table 6 IPMA Result from Smart PLS 4 (Author,2025)

The IPMA results highlight several indicators positioned in the "Concentrate Here" quadrant, meaning they have high importance for driving Green Entrepreneurial Self-Efficacy and Green Entrepreneurship but exhibit low performance in practice. These indicators include EM2, EM4, EM7 (Entrepreneurial Motivation) and GES2, GES3, GES5, GES6 (Green Entrepreneurial Skills). Their placement in this quadrant suggests that while motivation and green skills play a crucial theoretical role in shaping green entrepreneurial intentions, as supported by prior studies emphasizing intrinsic motivation and environmental competence as key antecedents of sustainability-oriented behavior (Solesvik, 2013; Vona et al., 2018), MSMEs in Jakarta currently demonstrate weak performance on these dimensions. In other words, entrepreneurs recognize the importance of motivation and skills for sustainability, but operational constraints, limited exposure, and lack of structured training hinder the actual development of these capabilities.

These low-performing yet high-impact indicators reflect core weaknesses that require immediate strategic attention. Improving entrepreneurial motivation—particularly through awareness programs, mentorship, and exposure to successful green business models—could significantly enhance MSMEs' willingness to adopt sustainability

initiatives. Similarly, boosting green entrepreneurial skills through technical workshops, hands-on environmental training, and university–industry collaborations would strengthen MSMEs' readiness to transition into greener business practices. By addressing these "Concentrate Here" indicators, stakeholders can lift the overall performance of constructs that have substantial influence on green entrepreneurship. Strengthening these areas aligns with findings in sustainability entrepreneurship research, which highlights the need for capability-building interventions to convert environmental awareness and motivation into effective entrepreneurial action (Y. Guo, 2020; Hussain et al., 2021). Therefore, the IPMA results offer a practical roadmap for policymakers, training institutions, and MSME support programs to prioritize interventions with the greatest potential impact.

Taken together, the IPMA findings reinforce the earlier hypothesis testing results by revealing that the most influential drivers of green entrepreneurship are not yet performing at their optimal level among MSMEs. The concentration of critical indicators—particularly those related to entrepreneurial motivation and green entrepreneurial skills—in the "Concentrate Here" quadrant highlights a pressing capability gap that must be addressed to strengthen sustainability-driven entrepreneurship. By identifying precisely where performance lags behind importance, the IPMA offers a strategic lens to prioritize interventions that can generate the greatest behavioral impact. These insights provide essential context for interpreting the broader implications of this study and set the foundation for the concluding discussion on how stakeholders can translate these findings into actionable, real-world strategies.

Overall, the findings reveal a nuanced picture of how MSMEs in Jakarta engage with green entrepreneurship. While several structural and motivational factors did not show direct significance, the results highlight that financial capacity and psychological readiness play a far more dominant role in shaping sustainability-oriented entrepreneurial behavior. This suggests that green entrepreneurship in emerging economies is not solely driven by skills, incentives, or opportunities, but rather by the combination of tangible resources and internal confidence that enable MSMEs to act despite uncertainty. These insights contribute to a deeper understanding of why sustainability adoption remains uneven among small enterprises and underscore the importance of addressing both practical and psychological barriers in promoting green entrepreneurial activity.

Taken together, the supported and unsupported hypotheses underscore the complexity of fostering green entrepreneurship within real-world MSME contexts. The findings show that capability-building efforts, financial support mechanisms, and self-efficacy development must function in an integrated manner to generate meaningful

impact. Rather than relying on isolated interventions, green entrepreneurship requires a holistic ecosystem that aligns policy incentives, market clarity, financial access, and entrepreneur confidence. These insights provide an empirical foundation for developing targeted programs and strategies that more effectively encourage sustainable business practices among MSMEs. The next section elaborates on these implications and offers concrete recommendations for policymakers, practitioners, and stakeholders seeking to advance green entrepreneurship in Indonesia.

5. CONCLUSION AND IMPLICATIONS

This study set out to explore the determinants of green entrepreneurship among MSMEs in Jakarta by examining how green entrepreneurial skills, perceived opportunities, entrepreneurial motivation, green incentives, and availability of capital contribute to sustainability-oriented business behavior. The findings reveal that all these factors significantly and positively influence green entrepreneurship, reinforcing the idea that sustainable entrepreneurial behavior emerges from a combination of capabilities, opportunities, motivations, and resource accessibility. Additionally, green entrepreneurial self-efficacy was found to be a strong predictor of green entrepreneurship and a key mediating mechanism across all relationships. This suggests that structural and motivational factors are most effective when entrepreneurs believe in their ability to implement sustainability practices successfully.

These insights contribute to the broader literature by highlighting the psychological dimension of sustainable entrepreneurship—demonstrating that even when MSMEs possess skills or resources, the belief in one's ability to act sustainably significantly strengthens the likelihood of green entrepreneurial behavior. In the context of Jakarta's environmental challenges and growing sustainability agenda, these findings emphasize the importance of nurturing both structural support systems and psychosocial readiness within MSMEs.

The study also carries several meaningful managerial implications for different stakeholders who collectively shape Jakarta's sustainability ecosystem. For government and policymakers, the results emphasize the value of integrating financial incentives with skill-building initiatives. Expanding tax credits, green grants, and low-interest loans can help reduce barriers to adopting sustainable technologies, but these must be paired with accessible training programs that enhance green capabilities and awareness among MSMEs. Furthermore, showcasing success stories and sustainability role models may help strengthen entrepreneurial self-efficacy at a societal level.

For MSME owners and managers, the study underscores the need to invest in internal green competencies and cultivate a culture that encourages sustainable innovation. Training employees on environmental practices, integrating sustainability into strategic planning, and experimenting with eco-friendly processes can increase both readiness and confidence in adopting green initiatives. Building strong internal self-efficacy can transform sustainability from an abstract ideal into practical, everyday business decision-making.

Financial institutions and investors also play a critical role, as availability of capital emerged as a strong determinant of green entrepreneurship. Banks, microfinance institutions, and impact investors are encouraged to develop financing products tailored to sustainability goals—offering flexible repayment terms, blended finance schemes, and credit assessments that account for environmental impact. Such support not only enhances MSME competitiveness but also aligns financial institutions with the rising global emphasis on green finance.

The study further highlights opportunities for entrepreneurial support organizations, including incubators, accelerators, universities, and NGOs. These institutions can strengthen the green entrepreneurial ecosystem by offering training on environmentally responsible technologies, organizing workshops on sustainability, and facilitating mentorship programs that bolster self-efficacy. Collaboration between these organizations and MSMEs can stimulate localized innovation and accelerate sustainable transformation.

Lastly, consumers and community stakeholders also have a meaningful influence. As consumer preferences shift toward environmentally conscious products, MSMEs can leverage this momentum by aligning their branding, packaging, and value propositions with sustainability principles. Communities, through awareness groups or online platforms, can help amplify and reward businesses that adopt green practices.

Despite its contributions, this study has limitations. The cross-sectional nature of the research limits the ability to infer long-term causal relationships. Future studies could use longitudinal designs to observe how green entrepreneurship evolves over time, or incorporate moderating variables such as environmental regulation pressure, digital readiness, or organizational culture to better understand contextual dynamics. Additionally, expanding the research beyond Jakarta to include rural regions or other Indonesian cities could provide a broader understanding of how green entrepreneurship differs across geographic and socio-economic contexts.

In conclusion, this study highlights that green entrepreneurship among MSMEs is shaped by an interplay of capability, opportunity, motivation, policy support, financial resources, and psychological belief. Strengthening both the external ecosystem and the inner confidence of MSME entrepreneurs may be key to accelerating Indonesia's progress toward a sustainable and resilient economic future. By focusing on holistic support—from policies and capital access to education and mindset development—stakeholders can collectively build a stronger foundation for green innovation in Jakarta and beyond.

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