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The Effect of Green Economy Incentive on MSMEs in Implementing Circular Economy Practice as Part of Sustainability Economy

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ABSTRACT

Purpose – This paper seeks to examine the influence of Green Economy Incentive (GEI) on Circular Economy Practice (CEP) among Micro, Small, and Medium Enterprises (MSMEs) in Jakarta, considering the mediating roles of Environmental Commitment (EC) and Green Ambidexterity Innovation (GAI). Methodology/approach – The study was conducted across 10 MSME centers in Jakarta with a total population of 164 MSME actors. Data were collected using a quantitative survey through a structured questionnaire employing a five-point Likert scale. Statistical analysis was performed to test direct and mediating relationships among GEI, EC, GAI, and CEP. Findings – It was found that GEI has a positive and significant effect on CEP with an influence value of 0.625. GEI also enhances GAI, which significantly mediates the relationship between GEI and CEP. However, EC does not mediate the relationship between GEI and CEP. These findings suggest that GEI contributes to strengthening CEP implementation by enhancing environmental awareness and adaptive innovation capabilities of MSMEs. Novelty/value – This study contributes to the growing literature on sustainable business transformation by providing empirical evidence of how green economy incentives can accelerate circular economy adoption among MSMEs in developing countries, particularly within the urban economic ecosystem of Jakarta.

INTRODUCTION

Sustainable economy is an approach that aims to meet present needs without compromising the ability of future generations to meet theirs. In the modern era, challenges such as climate change, resource depletion, and social inequality have become increasingly urgent issues to address. According to the (United Nations, 2024) , approximately 1.05 billion tons of food are wasted each year, contributing to greenhouse gas emissions and resource inefficiency. Consequently, the transition toward a sustainable economy is crucial to establishing an economic system that is both efficient and environmentally responsible (Xu et al., 2023). The World Economic Forum reported that implementing sustainable economic principles could boost global economic growth by up to USD 2.5 trillion annually and create

approximately 80 million new jobs by 2030. This demonstrates that sustainable economy initiatives are essential not only for environmental preservation but also for economic growth and job creation.
Micro, Small, and Medium Enterprises (MSMEs) play a vital role in Indonesia's economy, contributing about 60% to the national Gross Domestic Product (GDP) and employing more than 97% of the national workforce (Kamil, 2022) . In 2021, approximately 64 million MSMEs operated across the country, highlighting their importance in supporting economic growth and job creation. Data from (Kementerian Investasi/BKPM, 2023) show a continuous rise in both national GDP and MSME contribution from 2016 to 2019, emphasizing the significance of MSMEs in driving Indonesia's economic development. The concept of a circular economy, which emphasizes minimizing waste and maximizing resource use through recycling, reusing, and repairing, aligns closely with sustainability goals. According to the (MacArthur, 2021), adopting circular economy practices can reduce global greenhouse gas emissions by up to 70% by 2050. For MSMEs, implementing circular economy practices can reduce operational costs, increase efficiency, and create added value from waste materials (Mura et al., 2020).

Despite the potential benefits, MSMEs in Indonesia continue to face obstacles in implementing sustainable and circular practices, including limited access to finance, technology, and managerial capacity. Moreover, challenges related to regulatory complexity and tax structures further hinder their transition toward sustainable business models (Komite Pengawas Perpajakan Kementerian Keuangan Republik Indonesia, 2022; Santi, 2024). Although government initiatives such as the Medium-Term National Development Plan (RPJMN) 2020–2024 emphasize circular economy integration, practical adoption among MSMEs remains suboptimal. This research is significant because MSMEs represent the backbone of Indonesia's economy and have the potential to accelerate the national transition toward a sustainable and circular economy. Understanding how green economy incentives can promote sustainable practices will assist policymakers in designing more effective fiscal and non-fiscal support mechanisms.

From a theoretical perspective, this study contributes to sustainability literature by integrating GEI, EC, and GAI into a single analytical framework that explains how incentives shape behavioral and innovative capabilities among MSMEs. Empirically, the research provides new insights from the context of developing countries, particularly urban MSMEs in Jakarta, where environmental innovation and green transformation are still in the early stages. Several previous studies have highlighted the factors that influence the implementation of a circular economy by MSMEs. (Arsawan et al., 2023) found that green economy incentives and environmental commitments can strengthen circular economy practices. (Hossain et al., 2024) emphasizes the role of green ambidextrous innovation, while (Rodrigues & Franco, 2023) showed the limitations of MSMEs in green innovation due to limited resources. Similar studies in Italy and Europe also confirmed that the main obstacles include financial limitations, regulatory complexity, and a low understanding that sustainability is a long-term investment (Mura et al., 2020).

Based on these conditions, this study focuses on analyzing the influence of Green Economy Incentives (GEI) on the implementation of Circular Economy Practices (CEP) by MSMEs in Indonesia, by considering the mediating role of Environmental Commitment (EC) and Green Ambidexterity Innovation (GAI). This study is expected to provide theoretical contributions by filling research gaps related to the specific context of Indonesian MSMEs, as well as practical contributions in the form of policy recommendations and strategies for MSMEs in implementing circular economy practices sustainably.

LITERATURE REVIEW

Natural Resource-Based View (NRBV)

The Natural Resource-Based View (NRBV), first proposed by (Hart, 1995), extends the traditional Resource-Based View (RBV) by emphasizing the integration of environmental management into a firm's strategic resources. NRBV posits that companies can achieve sustainable competitive advantage through the development of capabilities in three interrelated dimensions: pollution prevention, product stewardship, and sustainable development. These dimensions highlight that environmental responsibility is not merely a compliance issue but a strategic asset that can enhance operational efficiency and market differentiation. In the context of small and medium enterprises (SMEs), adopting circular and sustainable practices aligns with the NRBV logic, as it enables firms to minimize waste, reduce costs, and create value through the efficient use of natural resources (Bocken et al., 2014).

For instance, food-sector MSMEs may convert organic waste into compost to lower disposal costs, while textile-based MSMEs can implement product stewardship by reusing fabric waste to produce new fashion items, enhancing both profitability and brand reputation. Furthermore, NRBV implies that firms consistently applying sustainability principles are more adaptable to tightening environmental regulations and evolving global market demands. Through proactive environmental strategies and innovation, MSMEs can position themselves competitively within global supply chains. Thus, NRBV provides a strong theoretical foundation for understanding how green economy incentives and innovation capabilities reinforce sustainable performance and circular economy adoption among MSMEs.

Circular Economy Practice (CEP)

Circular Economy Practice (CEP) focuses on designing waste out of the system by keeping products, materials, and resources in use for as long as possible (Geissdoerfer et al., 2017). In the MSME context, circular practices such as recycling, remanufacturing, and resource recovery lead to both environmental and economic benefits (Mura et al., 2020). However, studies also highlight barriers including high upfront costs, inadequate infrastructure, and limited consumer awareness (Murray et al., 2017). Empirical studies have demonstrated that Circular Economy Practice (CEP) can generate multiple benefits, including cost savings, increased resource efficiency, reduced carbon emissions, and enhanced innovation capabilities (Mura et al., 2020; Rizos et al., 2016). For instance, in the manufacturing and fashion industries, circular models such as repair, reuse, and recycling extend product lifecycles while reducing environmental footprints (Fletcher & Tham, 2019). In the SME context, adopting Circular Economy Practice (CEP) promotes business resilience and competitiveness, particularly when supported by policy incentives and technological innovation (Rodrigues & Franco, 2023).

However, the implementation of Circular Economy Practice (CEP) also faces significant barriers. Murray et al. (2017) and Kirchherr et al. (2018) identified challenges including high initial investment costs, insufficient recycling infrastructure, low consumer awareness, and organizational resistance to change. These barriers are particularly evident among MSMEs in developing countries, where financial and technical constraints limit the adoption of circular practices. Thus, the transition to a circular economy requires collaborative action among governments, industries, and consumers, as well as policy mechanisms that foster innovation and resource efficiency. Overall, Circular Economy Practice (CEP) serves as a critical operational framework within the sustainable economy paradigm, linking environmental goals with economic performance and providing the foundation for long-term business transformation.

Green Economy Incentive (GEI)

The Green Economy Incentive (GEI) refers to a range of financial and non-financial mechanisms designed to encourage sustainable business practices, reduce environmental degradation, and promote the transition toward a low-carbon economy (OECD, 2021; Dela Cruz et al., 2023). These incentives include tax reductions, green subsidies, preferential financing schemes, and technical support programs that encourage firms particularly micro, small, and medium enterprises (MSMEs) to adopt eco-friendly technologies and sustainable production methods (Adamowicz, 2022). The GEI framework aligns economic growth with environmental preservation by integrating three fundamental principles:

resource efficiency, social equity, and innovation-driven green transition. Resource efficiency involves optimizing energy and material use to reduce waste and environmental impact. Incentive schemes, such as energy-efficiency tax credits or renewable energy grants, help firms lower operational costs while minimizing carbon emissions (Chen et al., 2019; Kumar & Singh, 2020).

Social equity within *Green Economy Incentive (GEI)* ensures inclusive distribution of environmental and economic benefits through green job creation and access to clean technologies. Meanwhile, innovation-driven management emphasizes the development of eco-efficient production systems (Hawkes, 2023). Empirical evidence shows that GEI significantly accelerates sustainability transitions among MSMEs by reducing financial and technical barriers to adopting renewable energy and waste management technologies (Chen et al., 2019; Rodrigues & Franco, 2023). MSMEs receiving such incentives tend to innovate more, improve energy efficiency, and comply with environmental standards, enhancing competitiveness and brand image. However, the success of GEI depends on policy consistency, institutional support, and green skill development. As highlighted by the United Nations (2022), investing in environmental education and human capacity is vital to ensure long-term resilience. Thus, GEI not only mitigates environmental impacts but also strengthens social inclusion and economic sustainability in the circular economy framework.

Environmental Commitment (EC)

Environmental Commitment (EC) refers to a firm's internal dedication and proactive behavior toward environmental protection and sustainability. It encompasses not only awareness of environmental issues but also concrete managerial actions to minimize ecological impact (Mazzanti & Zoboli, 2009; Testa et al., 2011). EC represents the extent to which firms integrate environmental values into their strategy, culture, and operations—reflecting both moral responsibility and strategic orientation toward long-term sustainability (Banerjee, 2002). Education, stakeholder pressure, and regulatory frameworks are key drivers of EC within organizations. Empirical evidence indicates that owners and managers with higher environmental awareness are more likely to commit to green innovation and sustainable practices (Kuckertz & Wagner, 2010; Revell & Blackburn, 2007).

In the MSME context, limited resources often constrain environmental action, but government incentives, customer demands, and community engagement can strengthen commitment levels (Testa et al., 2011). Public policies providing tax relief, technical support, and sustainability training are proven to enhance firms' ability to adopt eco-friendly technologies and align their operations with environmental standards (Kuckertz & Wagner, 2010). Furthermore, EC plays a crucial role in enabling the transition toward *Circular Economy Practices (CEP)*. Companies with strong environmental commitment tend to redesign products for reusability, improve waste management, and adopt cleaner production processes (Ghisellini et al., 2016; Geissdoerfer et al., 2017). Such commitment fosters innovation, enhances corporate reputation, and increases responsiveness to market demand for sustainable products. Therefore, EC functions as both a moral and strategic foundation linking environmental awareness to operational sustainability and circular economy performance.

Green Ambidexterity Innovation (GAI)

Green Ambidexterity Innovation (GAI) refers to an organization's ability to simultaneously pursue environmental exploration and exploitation developing new green innovations while optimizing existing operations for sustainability (O'Reilly & Tushman, 2013; Jansen et al., 2006). In the context of micro, small, and medium enterprises (MSMEs), this dual capability enables firms to balance short-term operational efficiency with long-term environmental adaptation. Firms that practice ambidexterity can adopt cleaner production technologies, enhance energy efficiency, and improve waste reduction without compromising existing business performance (Kammerer, 2009; Chen et al., 2021). GAI plays a crucial role in advancing circular economy implementation. By integrating environmental goals into both *explorative* (innovation-driven) and *exploitative* (efficiency-driven) processes, MSMEs can design recyclable products, adopt renewable materials, and reduce reliance on hazardous inputs (Bocken et al.,

2014). This capability allows firms to adapt rapidly to regulatory pressures and shifting consumer preferences toward sustainable products (Li et al., 2020).
Empirical studies highlight that ambidextrous firms exhibit higher levels of green innovation performance, resource optimization, and sustainable competitiveness (Jansen et al., 2006; Cai & Li, 2018). In MSMEs, ambidexterity strengthens strategic agility and learning capability, both essential for responding to environmental changes and market uncertainties. Therefore, GAI acts as a dynamic capability that links *Green Economy Incentives* and *Circular Economy Practices*, ensuring that innovation not only supports profitability but also drives ecological and social sustainability.

Despite the growing body of research on sustainability and circular economy, several gaps remain. First, most studies on circular economy implementation have focused on large enterprises or developed economies, while empirical evidence from MSMEs in developing contexts like Indonesia remains scarce (Rizos et al., 2016; Wijaya et al., 2024). Second, although the role of Green Economy Incentive has been explored conceptually, limited studies have empirically examined its direct and indirect effects on MSME circular practices. Additionally, previous research has often treated environmental commitment and innovation separately, without fully investigating their mediating roles in linking incentives to circular performance outcomes. This leaves ambiguity regarding how Environmental Commitment and Green Ambidexterity Innovation interact within the MSME sustainability framework. Hence, this study addresses these gaps by integrating these variables into a single analytical model.

Hypotheses Development

Green Economy Incentive (GEI) and Circular Economy Practice (CEP).

Previous studies found that Green Economy Incentives (GEI) directly improve firms' sustainable behavior by reducing financial and technological barriers and motivating businesses to adopt environmentally friendly practices (Hossain et al., 2024; Rodrigues & Franco, 2023)**.** Drawing upon the Natural Resource-Based View (NRBV), external incentives enable organizations to utilize their resources more efficiently and develop eco-innovative capabilities, thereby enhancing their circular performance (Hart, 1995). Empirical evidence further supports that fiscal and non-fiscal incentives such as tax reductions, subsidies, and green financing accelerate MSMEs' adoption of circular production models by facilitating investment in renewable technologies and waste management systems (Adamowicz, 2022; Chen et al., 2019).

H1: Green Economy Incentive (GEI) has a positive and significant relationship with Circular Economy Practice (CEP).

Green Economy Incentive (GEI) and Environmental Commitment (EC).

According to Green Economy Theory, sustainable economic growth can be achieved by creating long-term value while minimizing environmental degradation and enhancing social well-being (United Nations Environment Programme, 2011). In this context, Green Economy Incentives (GEI), such as subsidies for eco-friendly technologies, tax exemptions, and access to green financing encourage firms, particularly micro, small, and medium enterprises (MSMEs), to adopt environmentally responsible behaviors and strengthen their Environmental Commitment (EC) (Adamowicz, 2022; Dela Cruz et al., 2023). Empirical research supports this view, showing that financial incentives increase firms' motivation to integrate environmental objectives into strategic and operational decisions, leading to higher awareness and proactive environmental management (Chen et al., 2019; Kuckertz & Wagner, 2010). (Arsawan et al., 2023) said that further found that GEI acts as a catalyst for the emergence of EC by encouraging internal environmental initiatives, sustainable product design, and resource-efficient asset management. These actions, in turn, enhance firms' competitiveness and reputation in sustainability-oriented markets.

H2: Green Economy Incentive (GEI) has a positive and significant relationship with Environmental Commitment (EC).

Green Economy Incentive (GEI) and Green Ambidexterity Innovation (GAI).
The Green Economy Incentive (GEI), encompassing various fiscal and non-fiscal mechanisms that promote environmentally friendly business practices, plays a crucial role in facilitating firms' ability to develop Green Ambidexterity Innovation (GAI). GAI reflects an organization's capability to balance exploration the pursuit of new ideas and sustainable technologies and exploitation the efficient use of existing resources and processes (O'Reilly & Tushman, 2013). Within this dual capacity, GEI provides firms with the necessary financial and technical support to integrate sustainability into both innovation and operational efficiency (Khoshnava et al., 2019). From the perspective of the *Natural Resource-Based View (NRBV)*, external incentives enhance organizational learning and innovation capabilities by reducing risk and encouraging investment in eco-efficient technologies (Hart, 1995). Empirical studies have shown that policy-driven incentives stimulate firms to explore green technologies while simultaneously improving existing systems to achieve operational sustainability (Adamowicz, 2022; Rodrigues & Franco, 2023). Moreover, (Hossain et al., 2024) found that *Green Entrepreneurial Orientation (GEO)* positively influences corporate green performance through *Green Ambidexterity Innovation (GAI)*, emphasizing that environmental incentives and strategic orientation jointly foster green innovation ambidexterity.
H3: Green Economy Incentive (GEI) has a positive and significant relationship with Green Ambidexterity Innovation (GAI).

Environmental Commitment (EC) and Circular Economy Practice (CEP).
Environmental Commitment (EC) refers to a firm's strategic and behavioral dedication to integrating sustainability principles into its operations and decision-making processes. Companies with strong EC tend to be more proactive in adopting Circular Economy Practices (CEP), which aim to minimize waste and maximize resource efficiency through recycling, remanufacturing, and product reuse (Murray et al., 2017). From the Natural Resource-Based View (NRBV) perspective, EC enhances firms' ability to manage resources responsibly and develop eco-innovative capabilities that support sustainable competitiveness (Hart, 1995).Empirical evidence confirms that EC positively influences the adoption of circular models by fostering internal environmental awareness and promoting waste-reduction initiatives (Geissdoerfer et al., 2017; Ghisellini et al., 2016). Firms committed to sustainability are more likely to invest in green technologies, redesign products for circularity, and implement environmental management systems that reduce operational inefficiencies (Testa et al., 2011). Moreover, EC strengthens the alignment between environmental objectives and strategic goals, facilitating a smoother transition from linear to circular production systems.
H4: Environmental Commitment (EC) has a positive and significant relationship with Circular Economy Practice (CEP).

Green Ambidexterity Innovation (GAI) and Circular Economy Practice (CEP).
Green Ambidexterity Innovation (GAI) refers to a firm's dual capability to simultaneously explore new sustainable opportunities while exploiting existing resources efficiently (O'Reilly & Tushman, 2013). This duality enables firms to develop products and processes that are both innovative and environmentally friendly, aligning closely with the principles of Circular Economy Practice (CEP), which emphasize waste reduction, resource recovery, and extended product lifecycles (Bocken et al., 2014). Within the Natural Resource-Based View (NRBV) framework, GAI represents a dynamic capability that integrates environmental innovation into operational systems, thereby enhancing both ecological performance and economic value (Hart, 1995).

Empirical studies confirm that GAI fosters firms' ability to create synergies between innovation and efficiency, leading to improved sustainability outcomes (Hossain et al., 2024). By simultaneously

pursuing exploration and exploitation, firms can implement cleaner production technologies, use recyclable materials, and design eco-efficient processes that minimize waste and maximize resource utilization (Li et al., 2015). Furthermore, GAI supports the transition from linear to circular production models by embedding environmental goals into innovation strategies and encouraging continuous improvement in sustainability performance.

H5: Green Ambidexterity Innovation (GAI) has a positive and significant relationship with Circular Economy Practice (CEP).

Environmental Commitment (EC) mediates the relationship between Green Economy Incentive (GEI) and Circular Economy Practice (CEP).

Green Economy Incentives (GEI), including financial aid, tax reductions, and policy support for sustainability like play a vital role in fostering firms' environmental commitment. According to Sustainability Commitment Theory and the Natural Resource-Based View (NRBV), external incentives not only encourage the adoption of eco-friendly technologies but also strengthen the organization's internal motivation to act responsibly toward the environment (Hart, 1995; Kramer, 2011). When firms receive such incentives, they tend to increase their Environmental Commitment (EC), which drives the implementation of Circular Economy Practices (CEP) such as recycling, reuse, waste minimization, and eco-design.

Empirical studies provide evidence for this mediating relationship. (Arsawan et al., 2023) found that GEI positively influences EC, which subsequently enhances firms' engagement in circular activities, including internal environmental management, eco-design, and corporate asset management and recovery. This finding implies that GEI alone may not directly lead to sustainable transformation unless firms possess a strong EC that translates external incentives into tangible circular practices. Thus, EC acts as a bridge that converts the motivation generated by external green incentives into concrete operational actions within the circular economy framework.

H6: Environmental Commitment (EC) mediates the relationship between Green Economy Incentive (GEI) and Circular Economy Practice (CEP).

Green Ambidexterity Innovation (GAI) mediates the relationship between Green Economy Incentive (GEI) and Circular Economy Practice (CEP).

Green Ambidexterity Innovation (GAI) represents a firm's dynamic capability to simultaneously explore new sustainable innovations while exploiting existing resources efficiently (O'Reilly & Tushman, 2013)**.** When firms receive Green Economy Incentives (GEI) such as subsidies, tax incentives, or financial assistance they are more likely to invest in eco-innovative projects that improve operational efficiency and support long-term sustainability goals (Adamowicz, 2022)**.** GEI stimulates firms' innovation capacity, enabling them to develop environmentally friendly products and processes that contribute to Circular Economy Practices (CEP), including recycling, reuse, and waste minimization (Bocken et al., 2014). From the Natural Resource-Based View (NRBV), GAI functions as a mediating capability that transforms external incentives into internal innovation outcomes (Hart, 1995)**.** Empirical evidence by (Wara et al., 2024) demonstrates that GAI significantly mediates the relationship between GEI and firms' sustainable performance, reinforcing that external environmental incentives are most effective when coupled with ambidextrous innovation capabilities. Through GAI, firms are able to simultaneously enhance innovation and efficiency like creating circular business models that reduce environmental impact while maintaining market competitiveness.

H7: Green Ambidexterity Innovation (GAI) mediates the relationship between Green Economy Incentive (GEI) and Circular Economy Practice (CEP).

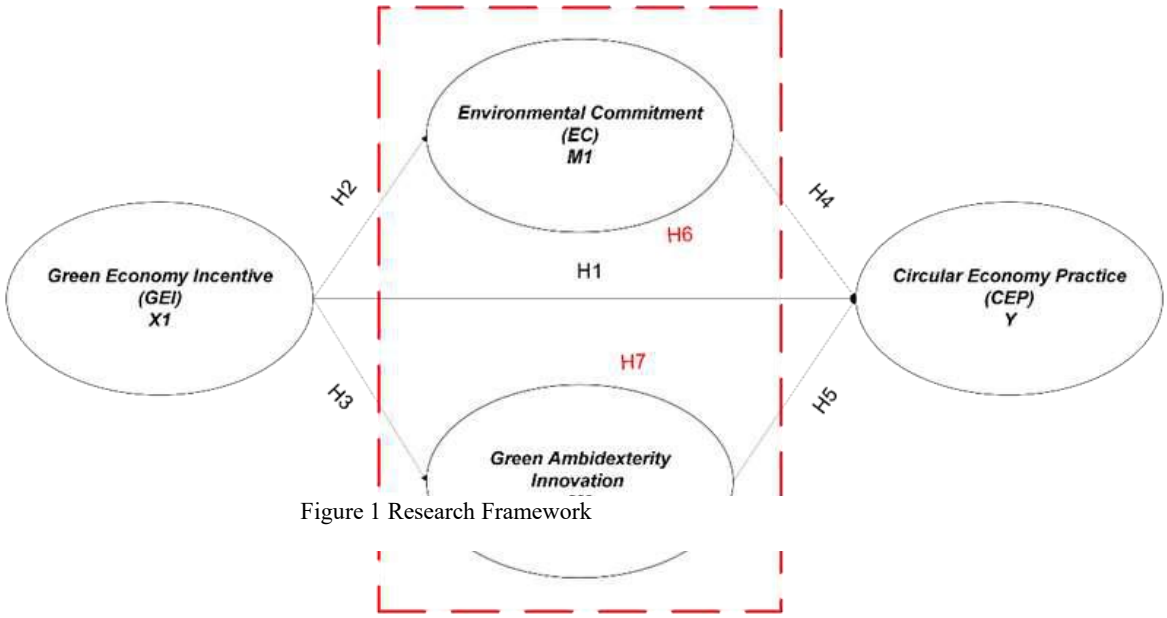

Figure 1 Research Framework

Figure 1. Research Framework

METHOD

This study adopts a quantitative research design aimed at exploring and analyzing the influence of the Green Economy Incentive (GEI) on the implementation of sustainable and circular practices among Micro, Small, and Medium Enterprises (MSMEs) in Jakarta. The research employs a descriptive and analytical approach to examine both the current condition of sustainable practices and the causal relationships among the variables. Data were collected through a structured quantitative survey using a Likert-scale questionnaire ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The survey measured perceptions, attitudes, and behaviors related to GEI, Environmental Commitment (EC), Green Ambidexterity Innovation (GAI), and Circular Economy Practice (CEP). The analysis utilized Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach to test both direct and mediating relationships among variables. This design allows for a comprehensive understanding of how incentives affect the adoption of sustainable business models and the extent to which environmental awareness and innovation mediate such relationships.

The study population comprised 10 MSME centers operating across five administrative regions of Jakarta: Central Jakarta: Pramuka Market Center, Culinary Business Center, West Jakarta: Batik and Textile Center, Apparel and Fashion Center. South Jakarta: Coffee and Traditional Culinary CentersEast Jakarta: Pottery and Handicraft Centers. North Jakarta: Health Equipment and Distribution Centers.

A total of 200 questionnaires were distributed, and after data cleaning excluding incomplete or inconsistent responses the final sample consisted of 164 valid respondents, all representing MSME actors. The sampling method employed was non-probability cluster sampling, where each cluster was

determined by geographical MSME centers. This method was chosen to focus on relevant and representative respondent groups aligned with the research objectives (Sugiyono, 2013). The inclusion criteria ensured that respondents were actively involved in operational or strategic decision-making within their businesses. This approach provided diverse insights from owners, general managers, and production heads, allowing for a comprehensive view of how MSMEs adopt and manage circular economy practices. Data were analyzed using Structural Equation Modeling Partial Least Squares (SEM-PLS) with the SmartPLS 4.0 software. This method was selected due to its suitability for complex models with multiple latent variables and indicators, as well as its flexibility in handling non-normal data distributions (Cepeda-Carrion et al., 2019; Wong, 2013).

RESULT AND DISCUSSION

Respondent Description

The respondents in this study consisted of 164 valid participants representing Micro, Small, and Medium Enterprises (MSMEs) operating across five administrative regions of Jakarta. The total number of valid samples was obtained after a data-cleaning process that excluded incomplete or inconsistent responses from an initial 200 distributed questionnaires. All respondents were active MSME actors involved in strategic or operational decision-making, such as business owners, managers, or supervisors who possessed direct knowledge of their firms' sustainability and circular practices. Although respondents' specific job titles were not collected in the questionnaire, the survey was explicitly targeted at individuals responsible for business operations, production management, and sustainability-related initiatives within their enterprises.

The respondents represented five key sectors: manufacturing, culinary, handicrafts, apparel and textiles, and health-related products. These sectors were chosen because they are recognized as priority areas for circular economy adoption in Indonesia, based on the Low Carbon Development Initiative report by the National Development Planning Agency of Indonesia. This composition ensures that the perspectives gathered reflect diverse industrial backgrounds and varying levels of engagement with green innovation and resource efficiency. The sample distribution was derived using non-probability cluster sampling, with clusters determined by MSME centers within each Jakarta region. This method was chosen to capture representative responses from different business clusters, ensuring adequate coverage of MSMEs operating under si milar economic and environmental conditions.Respondent Characteristics Based on Business Field

Table 1 Respondent Characteristics

Respondent Characteristics	Category	Frequency	Percentage
Business Field	Manufacturing	31	18%
	Culinary	29	17%
	Handicrafts	37	22%
	Garment/Apparel	47	27%
	Medical Equipment/Pharmaceuticals	28	16%
MSME Center Location	West Jakarta	39	24%
	East Jakarta	34	21%
	South Jakarta	42	25%
	North Jakarta	29	18%
	Central Jakarta	20	12%
Omzet per Month	Rp5.000.000 - Rp10.000.000	3	2%
	Rp10.000.000 – Rp15.000.000	37	23%
	Rp15.000.000 – Rp20.000.000	27	17%
	Lebih dari Rp20.000.000	94	58%
	1 – 5	25	13%

Number of Employees	6 - 10	60	31%
	11 - 20	34	17%
	More than 20	76	39%
Length of Business	Less than 1-5 years	11	7%
	5 – 10 years	43	26%
	10 – 15 years	48	29%
	15 – 20 years	32	20%
	More than 20 years	30	18%
Business Ownership	Own Business	132	80%
	Joint/Partnership with Partners	32	20%

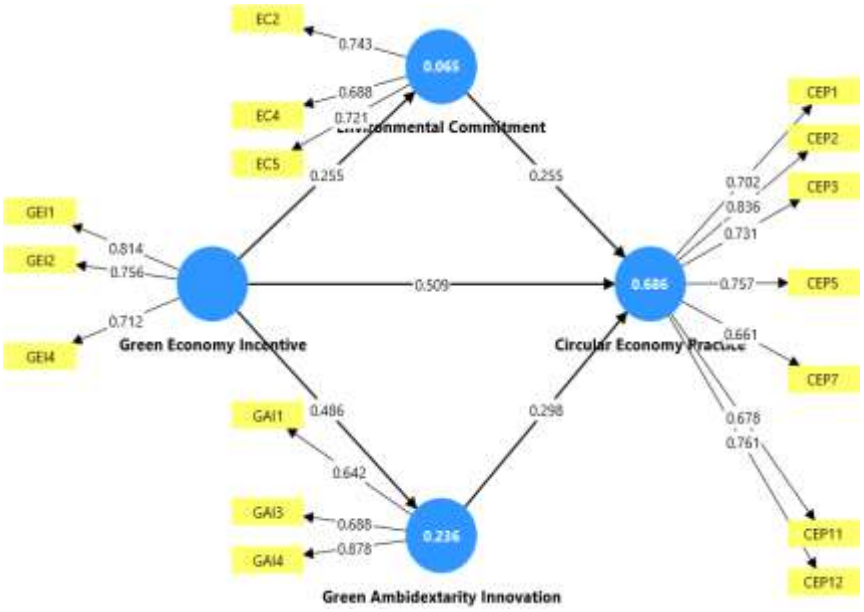

Figure 2 Final Loading Factor

Measurement Model Test Results

Table 2 Cross Loading Test Results

Variables	Indicator	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE	√AVE
Circular Economy Practice	CEP1	0.702	0.856	0.891	0.539	0.734
	CEP11	0.678				
	CEP12	0.761				
	CEP2	0.836				
	CEP3	0.731				
	CEP5	0.757				
	CEP7	0.661				
Environmental Commitment	EC2	0.743	0.533	0.761	0.515	0.718
	EC4	0.688				
	EC5	0.721				
Green Ambidextarity Innovation	GAI1	0.642	0.617	0.784	0.552	0.743

	GAI3	0.688				
	GAI4	0.878				
	GEI1	0.814	0.639	0.805	0.580	0.762
Green Economy Incentive	GEI2	0.756				
	GEI4	0.712				

Convergent Validity Analysis

Convergent validity in the PLS-SEM measurement model is used to ensure that each indicator adequately reflects its corresponding latent construct. Based on the data analysis using SmartPLS 4.0, all indicators of Circular Economy Practice (CEP), Environmental Commitment (EC), Green Ambidexterity Innovation (GAI), and Green Economy Incentive (GEI) show outer loading values greater than 0.50. This finding meets the convergent validity criterion proposed by (Ghozali & Latan, 2015), which states that an indicator is considered valid if its loading factor exceeds 0.50. Therefore, all indicators in this study are confirmed to have achieved convergent validity, indicating that they consistently and accurately represent their respective latent constructs and are appropriate for further structural model analysis.

Reability Test

The reliability test was performed to assess the consistency and accuracy of the measurement instruments in capturing the intended constructs. Within the Partial Least Squares–Structural Equation Modeling (PLS-SEM) framework, indicator reliability ensures that each item reflecting a latent variable produces stable and dependable results. According to Abdillah and Hartono (2015), construct reliability can be evaluated through Cronbach's Alpha and Composite Reliability (CR). Cronbach's Alpha measures the lower bound of internal consistency, while Composite Reliability provides a more precise estimate of the construct's overall reliability.

The results indicate that the Circular Economy Practice (CEP) variable demonstrates high internal consistency, with Cronbach's Alpha and CR values exceeding the recommended threshold of 0.70, and an Average Variance Extracted (AVE) value above 0.50, confirming strong construct reliability. Although the Environmental Commitment (EC) variable shows relatively lower Cronbach's Alpha and rho_a values, its Composite Reliability (rho_c) and AVE meet acceptable standards, indicating that the construct remains reliable. Similarly, the Green Ambidexterity Innovation (GAI) and Green Economy Incentive (GEI) variables exhibit adequate reliability, as their Composite Reliability and AVE values surpass 0.70 and 0.50, respectively, suggesting that all constructs in this study are internally consistent and suitable for further structural model analysis.Structural Model Test Results

Table 3 Structural Model Test

Construct	R-Square	F^2	Q^2 Predict
Circular Economy Practice (CEP)	0.680	0.625 (GEI → CEP)	0.495
Environmental Commitment (EC)	-	0.173 (EC → CEP)	0.026
Green Ambidexterity Innovation (GAI)	-	0.193 (GAI → CEP)	0.214

R-Square (R^2)

The R-square test results showed a value of 0.680, which means the model is able to explain 68% of the variation in the dependent variable. Based on the criteria (Abdillah & Hartono, 2015), this value is included in the strong category, so the structural model is stated to have good predictive ability, with the remaining 32% explained by other factors outside the model.

Effect Size

The effect size (f^2) analysis was conducted to assess the magnitude of influence between the constructs within the model. The results indicate that Green Economy Incentive (GEI) has a large effect on Circular Economy Practice (CEP) ($f^2 = 0.625$), suggesting that GEI plays a dominant role in driving the adoption of circular practices among MSMEs. The influence of Green Ambidexterity Innovation (GAI) on CEP is small to moderate ($f^2 = 0.193$), implying that innovation contributes meaningfully but not as strongly as GEI. Meanwhile, Environmental Commitment (EC) shows a small effect on CEP ($f^2 = 0.173$) and an almost negligible effect on GEI ($f^2 = 0.069$), indicating limited direct influence in the model. Conversely, GAI exhibits a moderate effect on GEI ($f^2 = 0.308$), reflecting a balanced and supportive relationship between green innovation and economic incentives. Overall, these results demonstrate that GEI is the most influential factor in enhancing circular economy practices, followed by GAI and EC, respectively.

Prediction Relevance Test (Q^2)

The results of the predictive relevance test (Q^2predict) indicate that the model has varying levels of predictive ability for each endogenous variable. The Circular Economy Practice (CEP) variable obtained a Q^2 predict value of 0.495, indicating strong predictive relevance. The Green Ambidexterity Innovation (GAI) variable had a Q^2 predict value of 0.214, thus falling into the moderate predictive relevance category. Meanwhile, the Environmental Commitment (EC) variable showed a Q^2 predict value of 0.026, falling into the weak predictive relevance category. Therefore, the model can be concluded to have good overall predictive power, especially for the Circular Economy Practice construct.

Hypothesis Testing

Table 4 Results of the Hypothesis Test

	Item	Sample mean	Standard deviation	T statistics (|O/STDEV|)	P values	
H1	***Green Economy Incentive -> Circular Economy Practice***	0.507	0.061	8.379	0.000	Accepted
H2	***Green Economy Incentive -> Environmental Commitment***	0.270	0.089	2.846	0.002	Accepted
H3	***Green Economy Incentive -> Green Ambidextarity Innovation***	0.500	0.065	7.454	0.000	Accepted
H4	***Environmental Commitment -> Circular Economy Practice***	0.251	0.100	2.553	0.005	Accepted
H5	***Green Ambidextarity Innovation-> Circular Economy Practice***	0.294	0.101	2.952	0.002	Accepted
H6	***Green Economy Incentive → Environmental Commitment → Circular Economy Practice***	0.069	0.038	1.689	0.053	Rejected
H7	***Green Economy Incentive → Green Ambidexterity Innovation → Circular Economy Practice***	0.148	0.056	2.596	0.041	Accepted

The hypothesis testing results reveal that all direct relationships in the model are positive and statistically significant. The Green Economy Incentive (GEI) has a significant positive effect on Circular Economy Practice (CEP) ($p = 0.000 < 0.05$), Environmental Commitment (EC) ($p = 0.002 <$

0.05), and Green Ambidexterity Innovation (GAI) ($p = 0.000 < 0.05$). Furthermore, both EC ($p = 0.005 < 0.05$) and GAI ($p = 0.002 < 0.05$) significantly influence CEP, indicating that stronger environmental commitment and green innovation capabilities enhance the adoption of circular economy practices among MSMEs. These results suggest that government-led green incentives not only stimulate firms to adopt environmentally responsible behaviors but also strengthen their innovation capacity, ultimately driving the implementation of circular and sustainable business models.

For the indirect effects, the mediating analysis shows that Environmental Commitment (EC) does not significantly mediate the relationship between GEI and CEP ($p = 0.053 > 0.05$), implying that while EC contributes directly to circular practices, it does not act as a significant transmission mechanism for green incentives. In contrast, Green Ambidexterity Innovation (GAI) plays a significant mediating role in the relationship between GEI and CEP ($p = 0.041 < 0.05$). This finding highlights that innovation serves as a critical pathway through which green economic incentives enhance circular economy adoption. Overall, the results emphasize that while environmental commitment strengthens sustainability efforts, innovation acts as the more effective channel linking green incentives to improved circular practices among MSMEs.

CONCLUSION

This study concludes that Green Economy Incentive (GEI) plays a crucial role in promoting the adoption of Circular Economy Practices (CEP) among micro, small, and medium enterprises (MSMEs) in Jakarta. The results confirm that GEI has a positive and significant influence on CEP, representing the strongest relationship in the model. This finding suggests that fiscal and non-fiscal incentives, such as tax reductions, green subsidies, and research grants encourage MSMEs to implement environmentally friendly technologies and sustainable production processes. This aligns with the Natural Resource-Based View (Hart, 1995) and Green Economy Theory, which emphasize the strategic importance of integrating environmental considerations into business operations to achieve sustainable competitive advantage. Similar to the findings of (Arsawan et al., 2023), this study supports the argument that green policy incentives directly facilitate the transition toward circular and resource-efficient business models.

Furthermore, the study demonstrates that GEI has a positive and significant effect on Environmental Commitment (EC), indicating that government incentives enhance not only economic performance but also environmental awareness among MSMEs. This relationship reinforces the assertion of (Arsawan et al., 2023) that financial and policy support increases firms' willingness to engage in sustainable practices, including eco-friendly product design and resource efficiency. However, the mediating effect of EC between GEI and CEP was found to be insignificant, suggesting that while environmental awareness is improving, it does not yet function as a primary mechanism for translating green incentives into circular economy implementation. This finding differs from theoretical expectations of (Murray et al., 2017) and may indicate that MSMEs still prioritize economic benefits over environmental values. Therefore, future studies should consider additional factors such as environmental literacy, education, and green culture that may strengthen the mediating role of environmental commitment.

The findings also reveal that Green Economy Incentive significantly enhances Green Ambidexterity Innovation (GAI), highlighting the role of incentives in fostering innovation that balances exploration of new green technologies and exploitation of existing resources. This result supports the Ambidexterity Theory (O'Reilly & Tushman, 2013), emphasizing the need for firms to pursue both innovation and efficiency simultaneously. In line with (Hossain et al., 2024)**,** the findings demonstrate that incentive-driven innovation enhances organizational adaptability, encouraging MSMEs to adopt greener practices and remain competitive in evolving markets. Additionally, GAI was found to significantly mediate the

relationship between GEI and CEP, confirming that innovation serves as a key mechanism that translates policy incentives into effective circular economy adoption. This is consistent with the study of (Wara et al., 2024), which found that ambidextrous innovation enables firms to develop eco-friendly products while optimizing operational efficiency, thereby strengthening sustainability performance.
Moreover, both Environmental Commitment (EC) and Green Ambidexterity Innovation (GAI) were found to have positive and significant direct effects on Circular Economy Practices. This indicates that firms with stronger environmental values and innovative capacities are more capable of adopting circular models through waste reduction, resource reuse, and efficient production systems. These results echo the conclusions of (Widhiastuti & Muafi, 2022), who found that environmental commitment in small industries supports sustainable production practices, and the work of (Bocken et al., 2014), which highlights innovation as a driver of circular transitions. Collectively, these findings reinforce the view that the synergy between environmental values and innovation capability forms the foundation for long-term sustainability among MSMEs. In summary, this study advances theoretical and practical understanding of how green economic incentives stimulate sustainability transformation. The integration of NRBV, Green Economy Theory, and Ambidexterity Theory provides a comprehensive framework explaining how incentives shape behavior, innovation, and circular adoption among MSMEs. Practically, the results suggest that policymakers should expand green fiscal programs, strengthen innovation-oriented funding, and provide technical assistance to improve environmental literacy. For future research, scholars are encouraged to investigate the moderating effects of factors such as organizational culture, digital transformation, or environmental policy frameworks, as well as to conduct comparative studies across regions or industries to enhance the generalizability of these findings.

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