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Managerial Environmental Awareness as a Contextual Mechanism in Advancing SME Sustainability: The Roles of Green Innovation, Dynamic Capabilities, and Organizational Culture

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Abstract---Small and medium-sized enterprises (SMEs) are increasingly required to adopt sustainable business practices; however, many SMEs still face challenges in integrating environmental strategies into their operational activities due to limited resources and adaptive capabilities. This study examines the effects of green innovation, dynamic capabilities, and organizational culture on business sustainability among SMEs in Denpasar City, Indonesia, while investigating the moderating role of managerial environmental awareness in these relationships. A quantitative research approach was employed using probability sampling. Data were collected through questionnaires distributed to SMEs in Denpasar City, resulting in 400 valid responses from 500 distributed questionnaires. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that green innovation, dynamic capabilities, and organizational culture positively and significantly influence business sustainability. These results indicate that environmentally oriented innovation, organizational adaptability, and sustainability-supportive culture contribute to enhancing SMEs' economic, social, and environmental performance. Furthermore, managerial environmental awareness strengthens the relationship between green innovation and business sustainability. However, managerial environmental awareness weakens the effect of dynamic capabilities on business sustainability and does not significantly moderate the relationship between organizational culture and sustainability. This study contributes to the sustainability management literature by demonstrating that managerial environmental awareness is not a universally positive mechanism but rather a contextual factor that influences how organizational resources translate into sustainability outcomes. Practically, the findings highlight the importance of developing green innovation strategies, strengthening adaptive capabilities, and cultivating environmentally oriented organizational cultures to achieve long-term business sustainability among SMEs.

Keywords---Green Innovation, Dynamic Capability, Organizational Culture, Managerial Environmental Awareness, Business Sustainability, SMEs.

Introduction

Business sustainability has become a critical concern in contemporary business strategies as organizations face increasing pressure to balance economic performance, environmental responsibility, and social welfare. The assessment of business success is no longer limited to financial outcomes but also encompasses firms' ability to contribute to environmental preservation and social value creation (Sutrisno et al., 2024). Global challenges such as climate change, pollution, and waste generation have prompted businesses to adopt more responsible practices, shifting the traditional profit-oriented paradigm toward a sustainability-oriented approach grounded in the Triple

Bottom Line framework (Setyaningrum & Mayangsari, 2022; Juanita et al., 2024). Furthermore, increasing consumer awareness has strengthened demand for environmentally friendly and ethically produced products, making sustainability a strategic necessity rather than merely a voluntary initiative (Dhenabayu et al., 2022).

From a theoretical perspective, sustainability practices are closely associated with stakeholder expectations. Stakeholder Theory emphasizes that firms have responsibilities not only toward shareholders but also toward customers, employees, communities, and the natural environment (Freeman, 2010). In this context, organizations are required to develop internal resources and strategic capabilities that enable them to respond effectively to diverse stakeholder demands. For small and medium-sized enterprises (SMEs), sustainability practices such as green innovation, organizational culture transformation, and dynamic capabilities represent strategic responses to environmental and social pressures (Ardani & Mahyuni, 2020).

The importance of business sustainability is particularly relevant for SMEs, which play a significant role in economic development, employment creation, and local economic resilience. However, SMEs often encounter substantial barriers in implementing sustainability-oriented practices due to limited financial resources, environmental knowledge, technological capabilities, and policy support (Anisah et al., 2023). These challenges are also experienced by SMEs in Bali, Indonesia, where many businesses rely on natural resources and local cultural assets, including handicrafts, nature-based tourism, herbal products, and cultural tourism activities (Idawati & Pratama, 2023). The dependence of these businesses on environmental resources highlights the importance of integrating sustainability strategies, such as green innovation, resource efficiency, waste reduction, and environmentally responsible operations.

The urgency of strengthening sustainability among SMEs is particularly evident in Denpasar City, Bali. Although Bali represents one of Indonesia's leading tourism and creative economy regions, the number of SMEs in Denpasar declined by 1.61% during 2019–2023, contrasting with the growth experienced by several other regions in Bali. This decline indicates that SMEs in Denpasar may face challenges in building business resilience and long-term sustainability strategies (Putri et al., 2024; Kuspriyadi et al., 2023). Previous studies suggest that SMEs frequently demonstrate short-term business orientations and limited sustainability planning due to constraints related to human resources, ownership structure, financing, marketing capabilities, and business management practices (Rumini & Martadiani, 2020; Hilmawati & Kusumaningtias, 2021; Imaniar & Siahaan, 2021). Therefore, understanding the organizational factors that enable SMEs to achieve sustainability becomes increasingly important.

One strategic approach that has received growing attention is green innovation. Green innovation enables firms to create economic value while reducing environmental impacts through environmentally oriented products and processes (Chen et al., 2018). Previous studies indicate that green innovation can enhance competitiveness by improving operational efficiency, strengthening environmental performance, and responding to changing consumer preferences (Qiu et al., 2020). Fatoki (2021) found that green innovation contributes significantly to the competitiveness of SMEs, while Zameer et al. (2020) demonstrated that green technology adoption improves environmental performance and organizational competitiveness. However, despite its potential benefits, green innovation adoption among SMEs remains challenging due to limited knowledge, resources, and managerial support (Hamid, 2025).

Beyond innovation, organizational capabilities also determine whether SMEs can successfully transform sustainability intentions into business practices. Dynamic capabilities represent an organization's ability to adapt, integrate, and reconfigure resources in response to changing business environments (Dieste et al., 2020; Trujillo-Gallego et al., 2022). Firms with strong dynamic capabilities are better able to respond to regulatory changes, consumer expectations, and environmental challenges by integrating sustainability principles into strategic decision-making processes (Liboni et al., 2023). Similarly, organizational culture serves as an internal foundation that shapes employee values, behaviors, and commitment toward sustainability objectives. A sustainability-oriented organizational culture facilitates the implementation of green practices by creating shared environmental values throughout the organization (Dieste et al., 2020).

Although previous studies have highlighted the importance of green innovation, dynamic capabilities, and organizational culture in supporting sustainability, the role of managerial environmental awareness remains insufficiently understood. Managerial environmental awareness reflects the extent to which managers recognize environmental issues and incorporate them into strategic decision-making. Managers with strong environmental awareness tend to be more proactive in adopting green strategies, responding to regulatory pressures, and aligning business practices with sustainability objectives (Zameer et al., 2022). However, existing findings regarding the role of managerial environmental awareness remain inconsistent. Some studies indicate that managerial environmental awareness strengthens sustainability-oriented strategies, while others suggest that its influence may vary depending on organizational conditions and performance dimensions (Santoso & Handoko, 2023). Therefore, further

investigation is needed to understand whether managerial environmental awareness consistently enhances sustainability outcomes or functions as a contextual mechanism.

This study addresses three important research gaps. First, an empirical gap exists regarding the inconsistent moderating role of managerial environmental awareness in sustainability research. While managerial awareness is expected to strengthen the relationship between organizational resources and sustainability outcomes, previous findings remain inconclusive (Zaini et al., 2025; Santoso & Handoko, 2023). Second, a contextual gap exists because previous studies have predominantly examined sustainability practices in large manufacturing firms or developed economies, while evidence from SMEs in emerging economies remains limited (Singh et al., 2022; Trujillo-Gallego et al., 2022; Aftab et al., 2022). SMEs possess distinct characteristics, including limited resources, informal decision-making structures, and short-term orientations, which may influence sustainability implementation differently from large organizations (Mengistu & Panizzolo, 2024). Third, this study addresses a theoretical gap by integrating Stakeholder Theory, Resource-Based View (RBV), and Upper Echelons Theory to explain how external stakeholder pressures, internal organizational capabilities, and managerial cognition jointly influence business sustainability (Freeman, 1984; Hahn et al., 2015).

Accordingly, this study examines the effects of green innovation, dynamic capabilities, and organizational culture on business sustainability among SMEs in Denpasar City, Indonesia, while investigating the moderating role of managerial environmental awareness. By integrating organizational resources and managerial perspectives, this study contributes to a deeper understanding of how SMEs transform sustainability-oriented resources into long-term business outcomes (Elhousseiny & Crispim, 2022).

Literature Review and Hypothesis Development

Green Innovation and Business Sustainability

Green innovation refers to organizational efforts to develop and implement environmentally oriented products, processes, and systems aimed at reducing negative environmental impacts (Jain et al., 2020). Through efficient resource utilization, waste reduction, and environmentally responsible operational practices, green innovation enables firms to achieve economic benefits while addressing environmental challenges (De Resende Ribeiro & Neto, 2021). From the perspective of Stakeholder Theory (Freeman, 1984), green innovation represents a strategic response to increasing stakeholder expectations regarding responsible business practices. By adopting green innovation, firms can strengthen legitimacy, enhance corporate reputation, improve customer trust, and establish long-term relationships with stakeholders, which ultimately contribute to business sustainability.

Empirical studies have demonstrated that green innovation contributes positively to organizational sustainability outcomes. Supriyanto et al. (2021) found that green innovation improves firm performance, which subsequently supports sustainable growth. Similarly, Kiefer et al. (2024) highlighted that organizations implementing green innovation achieve better sustainability performance by reducing environmental impacts from business activities. Furthermore, Elzek et al. (2021) confirmed that green innovation positively influences sustainability performance in tourism-related businesses, including travel agencies and hotels. Based on Stakeholder Theory and previous empirical evidence, green innovation is expected to enhance the ability of SMEs to achieve long-term sustainability. Therefore, the following hypothesis is proposed:

H1: Green innovation has a positive effect on business sustainability among SMEs in Denpasar City.

Dynamic capability represents an organization's ability to integrate, develop, and reconfigure internal and external resources in response to rapidly changing business environments (Teece, 2007). Through sensing, seizing, and reconfiguring processes, firms can adapt their strategies and resources to maintain competitiveness under uncertain conditions. From the perspective of the Resource-Based View (RBV), dynamic capability is considered a strategic organizational capability that enables firms to create sustainable competitive advantages by effectively utilizing valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). Furthermore, Stakeholder Theory suggests that dynamic capability allows organizations to respond effectively to stakeholder demands, including increasing expectations regarding environmental responsibility (Li et al., 2023).

Previous studies have confirmed the importance of dynamic capability in supporting sustainability outcomes. Dangelico et al. (2017) argued that dynamic capabilities enable organizations to continuously adapt and innovate in response to changing market conditions and environmental pressures. Putritamara et al. (2023) demonstrated that dynamic capability supports SMEs in learning, adapting, and responding effectively to business environmental changes. Similarly, Susiang (2024) and Zhu et al. (2023) emphasized that dynamic capability serves as an important

foundation for developing sustainable competitive strategies. Therefore, SMEs with stronger dynamic capabilities are expected to achieve higher levels of business sustainability. Accordingly, the following hypothesis is proposed:

H2: Dynamic capability has a positive effect on business sustainability among SMEs in Denpasar City.

Organizational culture refers to shared values, beliefs, norms, and practices that guide organizational members in performing daily activities (Yong et al., 2020). In the context of sustainability, an environmentally oriented organizational culture encourages employees to adopt responsible behaviors, improve resource efficiency, and support environmentally friendly business practices. From the perspective of RBV, organizational culture represents an intangible resource that develops uniquely within an organization through learning, experience, and social interaction, making it difficult for competitors to imitate (Barney, 1991). Therefore, sustainability-oriented organizational culture can become a strategic resource that strengthens long-term business performance.

Additionally, Stakeholder Theory (Freeman, 1984) explains that organizations need to develop internal values aligned with stakeholder expectations, including environmental responsibility. When environmental values become embedded within organizational culture, employees are more likely to consistently implement sustainable practices. Previous empirical studies support this relationship. Wang (2019) found that green organizational culture encourages environmental innovation and improves sustainability performance. Xiaoyi et al. (2023) and Sharma et al. (2021) demonstrated that organizations with strong green cultures are more capable of implementing sustainable business practices. Roscoe et al. (2019) further emphasized that employee involvement, leadership support, and consistent communication of environmental values are essential elements in developing green organizational culture. Thus, the following hypothesis is proposed:

H3: Organizational culture has a positive effect on business sustainability among SMEs in Denpasar City.

Managerial Environmental Awareness (MEA) reflects the extent to which managers recognize, value, and incorporate environmental considerations into strategic decision-making processes. Managers with high environmental awareness tend to allocate resources toward environmentally responsible initiatives and encourage the implementation of sustainability-oriented innovation (Tu & Wu, 2021). Based on Upper Echelons Theory (Hambrick & Mason, 1984), organizational strategies are influenced by managerial values, experiences, and cognitive characteristics. Therefore, managerial environmental awareness determines how managers interpret environmental challenges and transform green innovation initiatives into sustainability outcomes.

From the perspective of Stakeholder Theory (Freeman, 1984), managerial awareness enables organizations to better respond to stakeholder expectations regarding environmental responsibility. Managers who possess stronger environmental awareness are more likely to translate stakeholder pressures into strategic green innovation initiatives. Previous studies support the moderating role of managerial environmental awareness. Song et al. (2020) found that managerial environmental awareness encourages environmentally oriented innovation behavior, while Xue et al. (2019) demonstrated that environmentally oriented managerial attention strengthens the relationship between organizational strategies and sustainability performance. Saudi et al. (2019) also confirmed that managerial environmental awareness influences the relationship between green innovation and firm performance. Therefore, managerial environmental awareness is expected to strengthen the positive relationship between green innovation and business sustainability.

H4: Managerial environmental awareness strengthens the positive relationship between green innovation and business sustainability among SMEs in Denpasar City.

Managerial environmental awareness may also influence how organizations utilize dynamic capabilities to achieve sustainability outcomes. According to Upper Echelons Theory (Hambrick & Mason, 1984), managerial cognition shapes strategic decisions and determines how organizational capabilities are deployed. Managers with high environmental awareness are expected to direct organizational adaptation processes toward sustainability-oriented objectives by integrating environmental considerations into strategic changes.

Furthermore, Stakeholder Theory suggests that managerial environmental awareness enables organizations to interpret stakeholder demands and transform them into adaptive strategies. When dynamic capabilities are supported by strong environmental awareness, organizations are expected to become more responsive to environmental changes and sustainability challenges. Previous research indicates that managerial attention toward environmental issues enhances the effectiveness of organizational capabilities in achieving sustainability performance (Xue et al., 2019). Putritamara et al. (2023) found that dynamic capability enables SMEs to adapt effectively to changing environments, while Makhouloufi et al. (2022) emphasized the importance of managerial commitment toward environmental responsibility in achieving sustainability outcomes. Therefore, managerial environmental awareness is expected to strengthen the relationship between dynamic capability and business sustainability.

H5: Managerial environmental awareness strengthens the positive relationship between dynamic capability and business sustainability among SMEs in Denpasar City.

Managerial environmental awareness is also expected to influence the extent to which organizational culture contributes to sustainability outcomes. In SMEs, where decision-making authority is often concentrated among owners or managers, managerial values and environmental awareness play an important role in shaping organizational values and behaviors. Based on Upper Echelons Theory (Hambrick & Mason, 1984), managers' cognitive orientations influence strategic priorities and organizational practices, including sustainability-oriented culture development.

From the RBV perspective, organizational culture represents an intangible strategic resource that can generate sustainable competitive advantages (Barney, 1991). However, the effectiveness of such culture depends on managerial commitment and the ability to translate environmental values into organizational practices. Stakeholder Theory further suggests that environmentally oriented organizational culture represents an internal mechanism for responding to external stakeholder expectations. Previous studies indicate that managerial support strengthens sustainability implementation. Xue et al. (2019) found that managerial support enhances sustainability strategies, while Shah et al. (2021) highlighted the role of management commitment in developing green organizational culture. Zameer et al. (2020) also demonstrated that managerial environmental awareness influences strategic decisions related to sustainability practices. Therefore, managerial environmental awareness is expected to strengthen the relationship between organizational culture and business sustainability.

H6: Managerial environmental awareness strengthens the positive relationship between organizational culture and business sustainability among SMEs in Denpasar City.

Methods

This study employed a quantitative research approach to examine the relationships between green innovation, dynamic capability, organizational culture, business sustainability, and the moderating role of managerial environmental awareness among SMEs in Denpasar City, Indonesia. The quantitative approach was selected because this study aims to empirically test the proposed theoretical model and examine the causal relationships among constructs through statistical analysis. The research model was developed based on the integration of Stakeholder Theory, Resource-Based View (RBV), and Upper Echelons Theory to explain how organizational resources and managerial characteristics contribute to business sustainability outcomes.

The population of this study consisted of SMEs operating in Denpasar City, Bali, Indonesia. Based on data from the Department of Cooperatives and SMEs of Bali Province, the number of SMEs in Denpasar City reached 29,749 units in 2023. The sample was determined using a probability sampling technique to ensure that each member of the population had an equal opportunity to be selected. A total of 500 questionnaires were distributed to SME owners or managers, and 400 valid responses were obtained and used for further analysis, resulting in an effective response rate of 80%. The respondents were selected based on their involvement in business decision-making processes, particularly regarding operational strategies, innovation adoption, and sustainability practices.

Data were collected using a structured questionnaire developed based on previously validated measurement scales from relevant studies. The questionnaire measured five main constructs: green innovation, dynamic capability, organizational culture, managerial environmental awareness, and business sustainability. Each construct was measured using multiple indicators assessed on a Likert scale. Green innovation was measured through environmentally oriented product and process innovation practices, while dynamic capability was assessed based on the organization's ability to identify changes, utilize opportunities, and reconfigure resources. Organizational culture was measured based on shared values and practices supporting sustainability, whereas managerial environmental awareness reflected managers' attention, understanding, and commitment toward environmental issues. Business sustainability was evaluated based on economic, social, and environmental dimensions.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of statistical software. PLS-SEM was selected because it is suitable for predictive research models involving multiple constructs and moderation relationships, particularly in studies focusing on organizational behavior and sustainability management. The analysis was conducted through two stages: evaluation of the measurement model and evaluation of the structural model. The measurement model assessment examined construct reliability and validity through indicator loading, composite reliability, Cronbach's alpha, and average variance extracted (AVE). The structural model assessment evaluated the relationships among constructs by examining path

coefficients, coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and hypothesis testing through bootstrapping procedures.

To examine the moderating role of managerial environmental awareness, a moderation analysis was conducted to determine whether managerial environmental awareness influences the strength of the relationships between green innovation, dynamic capability, organizational culture, and business sustainability. This analysis enables the study to identify whether managerial environmental awareness functions as a contextual mechanism that strengthens or weakens the influence of organizational factors on sustainability outcomes among SMEs.

Result and Discussion

Measurement Model Assessment

The measurement model was evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM) to ensure the reliability and validity of the constructs before examining the structural relationships. The assessment consisted of convergent validity, discriminant validity, reliability analysis, and collinearity assessment. Table 1 presents the results of convergent validity and reliability evaluation.

Table 1
Construct Reliability and Convergent Validity Assessment

Construct	Loading Range	AVE	Cronbach's Alpha	Composite Reliability
Green Innovation	0.730–0.862	0.631	0.854	0.895
Dynamic Capability	0.734–0.782	0.579	0.910	0.925
Organizational Culture	0.735–0.790	0.589	0.884	0.909
Managerial Environmental Awareness	0.773–0.832	0.646	0.909	0.927
Business Sustainability	0.748–0.802	0.606	0.946	0.952

Primary Data, 2026

The results indicate that all measurement indicators achieved acceptable outer loading values above the recommended threshold of 0.70, demonstrating adequate indicator reliability. Furthermore, the Average Variance Extracted (AVE) values for all constructs exceeded the minimum threshold of 0.50, indicating that each construct successfully explains more than 50% of the variance of its indicators. Therefore, all constructs demonstrate satisfactory convergent validity (Hair et al., 2022).

The reliability assessment also confirms that all constructs achieved satisfactory internal consistency. The Cronbach's alpha and composite reliability values were above the recommended value of 0.70, indicating that the measurement instruments consistently represent their respective latent constructs. The highest composite reliability value was observed for business sustainability (0.952), followed by managerial environmental awareness (0.927), demonstrating strong measurement consistency. Discriminant validity was subsequently assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait Ratio (HTMT). The results are presented in Table 2.

Table 2
Discriminant Validity Assessment Using HTMT Criterion

Construct Relationship	HTMT Value
Managerial Environmental Awareness – Green Innovation	0.406
Business Sustainability – Green Innovation	0.375
Business Sustainability – Managerial Environmental Awareness	0.321
Business Sustainability – Dynamic Capability	0.145
Business Sustainability – Organizational Culture	0.124

Primary Data, 2026

The HTMT values were below the recommended threshold of 0.90, indicating that each construct possesses adequate discriminant validity and represents a distinct theoretical concept (Henseler et al., 2015). The Fornell–Larcker criterion also confirmed that the square root of AVE values for each construct exceeded the correlations with other constructs, further supporting the discriminant validity of the measurement model. Additionally, collinearity assessment was conducted to ensure that predictor constructs did not suffer from multicollinearity problems. Table 3 presents the inner variance inflation factor (VIF) values.

Table 3
Collinearity Assessment

Structural Relationship	VIF
Green Innovation → Business Sustainability	1.227
Dynamic Capability → Business Sustainability	1.044
Organizational Culture → Business Sustainability	1.012
Managerial Environmental Awareness → Business Sustainability	1.198
MEA × Green Innovation → Business Sustainability	1.073
MEA × Dynamic Capability → Business Sustainability	1.040
MEA × Organizational Culture → Business Sustainability	1.041
Primary Data, 2026	

All VIF values were below the threshold of 3.3, indicating the absence of multicollinearity issues among the predictor constructs (Kock, 2015; Hair et al., 2022). Furthermore, the full collinearity assessment also confirmed that common method bias was not a concern, as all VIF values remained below the recommended threshold. These findings suggest that the structural model estimation is reliable and not substantially influenced by measurement bias.

Structural Model Assessment

After confirming the adequacy of the measurement model, the structural model was evaluated by examining the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2).

Table 4
Structural Model Evaluation

Assessment	Value	Interpretation
R^2 (Business Sustainability)	0.265	Explanatory power
Adjusted R^2	0.252	Stable explanatory capacity
Q^2 Predictive Relevance	0.152	Medium predictive relevance
Primary Data, 2026		

The structural model explains 26.5% of the variance in business sustainability among SMEs in Denpasar City. Although the explanatory power is moderate, this level is considered acceptable in behavioral and organizational studies, where sustainability outcomes are influenced by multiple internal and external factors (Hair et al., 2022). The remaining variance may be attributed to other determinants outside the current model, such as financial access, government support, digital capability, entrepreneurial orientation, and external market conditions.

The predictive relevance assessment demonstrated a Q^2 value of 0.152, indicating that the model possesses predictive relevance. Based on Hair et al. (2022), a Q^2 value above zero indicates predictive capability, while a value around 0.15 represents moderate predictive relevance. Therefore, the proposed model demonstrates both explanatory and predictive capability in explaining SME business sustainability.

The effect size analysis showed that managerial environmental awareness contributed the largest effect size toward business sustainability ($f^2 = 0.084$), followed by dynamic capability ($f^2 = 0.055$) and green innovation ($f^2 = 0.050$). Although these effects are categorized as small, they demonstrate that organizational and managerial factors jointly contribute to sustainability outcomes. Meanwhile, organizational culture showed a smaller effect size ($f^2 = 0.017$), suggesting that its contribution is more embedded and indirect through organizational routines and shared values.

Hypothesis Testing and Discussion

The hypotheses were tested using the bootstrapping procedure in PLS-SEM with 5,000 resamples. A hypothesis was considered supported when the path coefficient showed a significant effect based on a t-value greater than 1.96 and a p-value below 0.05. Table 5 presents the results of direct and moderating effects.

Table 5
Hypothesis Testing Results

Hypothesis	Relationship	Path Coefficient (β)	t-value	p-value	Decision
H1	Green Innovation $\rightarrow$ Business Sustainability	0.212	4.340	<0.001	Supported
H2	Dynamic Capability $\rightarrow$ Business Sustainability	0.205	5.039	<0.001	Supported
H3	Organizational Culture $\rightarrow$ Business Sustainability	0.112	2.604	0.009	Supported
H4	MEA $\times$ Green Innovation $\rightarrow$ Business Sustainability	0.240	5.526	<0.001	Supported
H5	MEA $\times$ Dynamic Capability $\rightarrow$ Business Sustainability	-0.080	2.038	0.042	Supported (Negative Moderation)
H6	MEA $\times$ Organizational Culture $\rightarrow$ Business Sustainability	0.009	0.238	0.812	Not Supported

Primary Data, 2026

The Effect of Green Innovation on Business Sustainability

The results indicate that green innovation has a positive and significant effect on business sustainability ($\beta = 0.212$, $t = 4.340$, $p < 0.001$), supporting H1. This finding demonstrates that SMEs implementing environmentally oriented innovations, including green product development and environmentally efficient business processes, are more likely to achieve better sustainability outcomes across economic, environmental, and social dimensions.

This finding supports Stakeholder Theory (Freeman, 1984), which emphasizes that organizational success depends not only on financial performance but also on the ability to respond to the expectations of various stakeholders. In the context of SMEs in Denpasar City, green innovation represents a strategic response to increasing environmental expectations from customers, government institutions, and local communities. By adopting environmentally responsible practices, SMEs can strengthen legitimacy, improve stakeholder trust, and create long-term business value.

The finding also aligns with the Resource-Based View (RBV) perspective, which considers green innovation as a strategic capability that can generate sustainable competitive advantages. Green innovation provides value through operational efficiency, resource optimization, and improved market positioning among environmentally conscious consumers. Previous studies have similarly demonstrated that green innovation contributes to sustainability performance by reducing environmental impacts while enhancing organizational competitiveness (Zameer et al., 2020; Fatoki, 2021; Supriyanto et al., 2021; Kiefer et al., 2024).

The positive relationship identified in this study is particularly relevant in the context of SMEs in Denpasar, where businesses operate within a tourism-oriented economy that increasingly emphasizes environmental responsibility. Unlike large corporations with formal sustainability systems, SMEs often rely on practical environmental initiatives embedded within daily operations. Therefore, green innovation becomes not only an environmental strategy but also a mechanism for strengthening resilience and maintaining competitiveness in a changing business environment.

The Effect of Dynamic Capability on Business Sustainability

The findings demonstrate that dynamic capability positively influences business sustainability ($\beta = 0.205$, $t = 5.039$, $p < 0.001$), supporting H2. This result indicates that SMEs with stronger abilities to identify environmental changes, capture emerging opportunities, and reconfigure their resources are better positioned to achieve long-term sustainability.

The finding reinforces Dynamic Capability Theory (Teece, 2007), which argues that organizational survival in dynamic environments depends on the ability to continuously renew and adapt resources. For SMEs, particularly those operating in competitive and uncertain environments such as Denpasar's tourism-based economy, adaptability

becomes a critical mechanism for responding to changing customer preferences, regulatory pressures, and sustainability demands.

From the perspective of Stakeholder Theory (Freeman, 1984), dynamic capability enables SMEs to recognize and respond to stakeholder expectations more effectively. Rather than treating sustainability requirements as external pressures, firms with stronger dynamic capabilities can transform these demands into strategic opportunities through innovation, operational improvement, and resource restructuring.

This finding is consistent with previous studies showing that dynamic capability facilitates sustainable business development by enabling organizations to continuously adapt and integrate sustainability principles into their strategies (Dangelico et al., 2017; Trujillo-Gallego et al., 2022; Putritamara et al., 2023; Zhu et al., 2023). The result also highlights that for SMEs with limited tangible resources, adaptive capability represents an important intangible asset that allows them to compete and survive despite structural limitations.

The Effect of Organizational Culture on Business Sustainability

The analysis reveals that organizational culture has a positive and significant effect on business sustainability ($\beta = 0.112$, $t = 2.604$, $p = 0.009$), supporting H3. This finding suggests that sustainability-oriented values, norms, and shared beliefs embedded within organizations contribute to the development of environmentally responsible business practices.

The result supports the RBV perspective (Barney, 1991), which views organizational culture as an intangible strategic resource that is valuable, socially complex, and difficult for competitors to imitate. Unlike physical resources, organizational culture develops through long-term processes of learning, interaction, and shared experiences, making it an important foundation for sustainable competitive advantage.

Furthermore, Stakeholder Theory explains that organizational culture represents an internal mechanism through which firms respond to external expectations regarding environmental and social responsibility (Freeman, 1984). When sustainability values become embedded within organizational routines, employees are more likely to consistently implement environmentally responsible practices.

This finding is consistent with previous studies demonstrating that green-oriented organizational culture enhances sustainability performance by encouraging employee involvement, environmental awareness, and collective commitment toward sustainability goals (Wang, 2019; Roscoe et al., 2019; Sharma et al., 2021; Xiaoyi et al., 2023). In the context of SMEs in Denpasar, organizational culture may also be strengthened by local values emphasizing harmony between humans, society, and nature, allowing sustainability practices to become naturally integrated into business activities.

The Moderating Role of Managerial Environmental Awareness on the Relationship between Green Innovation and Business Sustainability

The interaction effect between managerial environmental awareness and green innovation is positive and significant ($\beta = 0.240$, $t = 5.526$, $p < 0.001$), supporting H4. This finding indicates that managerial environmental awareness strengthens the positive relationship between green innovation and business sustainability.

This result suggests that green innovation alone may not automatically generate sustainability benefits unless supported by managerial commitment and environmental orientation. In SMEs, where strategic decisions are often concentrated in the hands of owners or managers, environmental awareness determines how strongly sustainability initiatives are prioritized and implemented.

The finding is explained by Upper Echelons Theory (Hambrick & Mason, 1984), which proposes that organizational strategies reflect managerial values, cognition, and interpretations of external conditions. Managers with high environmental awareness are more likely to perceive environmental challenges as strategic opportunities rather than operational burdens. Consequently, they are more willing to allocate limited resources toward green innovation initiatives.

The result is also consistent with Stakeholder Theory, where managerial awareness functions as a mechanism that translates stakeholder expectations into strategic organizational actions. Previous studies have confirmed that managerial environmental awareness enhances the effectiveness of green innovation strategies by encouraging environmental investment and sustainability-oriented decision-making (Song et al., 2020; Tu & Wu, 2021; Xue et al., 2019; Zameer et al., 2022).

The Moderating Role of Managerial Environmental Awareness on the Relationship between Dynamic Capability and Business Sustainability

The interaction between managerial environmental awareness and dynamic capability is statistically significant; however, the coefficient is negative ($\beta = -0.080$, $t = 2.038$, $p = 0.042$). Therefore, H5 is statistically supported as a moderating effect but does not support the predicted positive direction. Instead, managerial environmental awareness weakens the relationship between dynamic capability and business sustainability.

This unexpected finding provides an important theoretical contribution by demonstrating that managerial environmental awareness does not always function as a sustainability accelerator. In resource-constrained SME contexts, excessive environmental awareness may create additional complexity in strategic decision-making. Managers with high environmental awareness may face tensions between pursuing environmental objectives and maintaining economic viability, potentially limiting the flexibility and speed required in dynamic capability processes.

This phenomenon can be explained through the concept of sustainability tensions proposed by [Hahn et al. \(2015\)](#), which highlights that organizations often experience conflicting demands between economic objectives and sustainability aspirations. For SMEs with limited financial and technological resources, balancing these competing priorities may reduce the effectiveness of adaptive capabilities.

Furthermore, from the perspective of Upper Echelons Theory ([Hambrick & Mason, 1984](#)), managerial cognition influences strategic choices, but its effects depend on organizational conditions and available resources. In large organizations with sufficient resources, environmental awareness may accelerate strategic transformation; however, in SMEs, highly careful environmental considerations may constrain rapid adaptation and experimentation.

Therefore, this finding extends previous sustainability literature by demonstrating that managerial environmental awareness represents a contextual mechanism rather than a universally positive driver. The effectiveness of managerial environmental awareness depends on whether organizations possess sufficient resources and flexibility to translate environmental intentions into adaptive capabilities.

The Moderating Role of Managerial Environmental Awareness on the Relationship between Organizational Culture and Business Sustainability

The interaction effect between managerial environmental awareness and organizational culture is not significant ($\beta = 0.009$, $t = 0.238$, $p = 0.812$). Therefore, H6 is not supported. This finding indicates that managerial environmental awareness does not strengthen or weaken the relationship between organizational culture and business sustainability. The absence of moderation suggests that organizational culture may already function as an embedded organizational mechanism that operates independently from individual managerial awareness. Once sustainability values become internalized in organizational routines and employee behavior, their influence on sustainability outcomes may no longer depend heavily on managerial environmental orientation.

This finding is consistent with [Schein's \(2010\)](#) perspective that organizational culture represents shared assumptions and collective values developed through organizational learning processes. In this context, sustainability-oriented behaviors become part of everyday organizational practices rather than merely reflecting managerial intentions.

From the RBV perspective, organizational culture represents a socially complex intangible resource that develops over time and cannot be easily modified through managerial intervention alone ([Barney, 1991](#)). Therefore, although managers play an important role in initiating cultural change, the sustainability impact of an established organizational culture may become relatively independent from individual managerial characteristics.

The finding contributes to sustainability literature by suggesting that managerial environmental awareness has different effects depending on the organizational mechanism involved. While managerial awareness is crucial in directing strategic investments such as green innovation, it may have limited influence on deeply embedded organizational values and routines.

Conclusion

This study examined the influence of green innovation, dynamic capability, and organizational culture on business sustainability among SMEs in Denpasar City, Indonesia, while investigating the moderating role of managerial environmental awareness. Drawing upon Stakeholder Theory, Resource-Based View, and Upper Echelons Theory, this study provides empirical evidence that organizational resources and managerial cognition jointly shape sustainability outcomes in SME contexts.

The findings demonstrate that green innovation, dynamic capability, and organizational culture significantly contribute to business sustainability. These results indicate that SMEs can enhance their long-term sustainability by

developing environmentally responsible innovations, strengthening their ability to adapt to environmental changes, and embedding sustainability values within organizational practices. Among these factors, green innovation and dynamic capability represent important strategic mechanisms that enable SMEs to respond to increasing environmental pressures while maintaining competitiveness.

Furthermore, this study reveals that managerial environmental awareness plays a more complex role than previously assumed. Managerial environmental awareness strengthens the relationship between green innovation and business sustainability, suggesting that environmentally conscious managers are better able to translate green initiatives into sustainable business outcomes. However, managerial environmental awareness weakens the relationship between dynamic capability and sustainability, indicating that environmental considerations may create strategic tensions when SMEs face resource limitations and competing economic priorities. In addition, managerial environmental awareness does not significantly moderate the relationship between organizational culture and business sustainability, suggesting that deeply embedded sustainability-oriented cultures may operate independently from individual managerial perceptions.

These findings extend the sustainability management literature by demonstrating that managerial environmental awareness does not function as a universal enhancer of sustainability performance. Instead, its contribution depends on the type of organizational mechanism through which sustainability strategies are implemented. This study therefore highlights the importance of understanding sustainability as a contextual process involving the interaction between organizational capabilities, cultural foundations, and managerial cognition.

From a broader perspective, this study contributes empirical evidence from SMEs in an emerging economy context, where limited resources and operational challenges often constrain sustainability implementation. The findings emphasize that achieving business sustainability requires not only adopting green practices but also developing organizational capabilities and managerial approaches that are aligned with the specific conditions faced by SMEs.

Managerial Implication

The findings provide important implications for SME owners and managers in developing sustainability-oriented business strategies. SMEs should view green innovation not merely as an environmental responsibility but as a strategic approach to improving competitiveness and long-term business resilience. Managers need to strengthen dynamic capabilities by enhancing organizational adaptability, learning capacity, and resource reconfiguration to respond effectively to market and environmental changes. However, the negative moderating effect of managerial environmental awareness on the relationship between dynamic capability and sustainability highlights the importance of balancing environmental objectives with operational feasibility and resource availability. Furthermore, sustainability-oriented organizational culture should be developed as a collective organizational capability through shared values, employee involvement, and consistent environmental practices rather than relying solely on individual managerial awareness. For policymakers and SME support institutions, sustainability programs should therefore focus not only on increasing environmental awareness but also on providing practical assistance in green innovation adoption, capability development, and organizational transformation to enable SMEs to achieve sustainable growth.

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