

RESEARCH ARTICLE

A MEDIATION–MODERATION MODEL OF SUSTAINABILITY PERFORMANCE AMONG MSMES IN SURAKARTA CITY

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Abstract : This study examines the effects of green corporate governance, green accounting, government intervention, and green organizational culture on the sustainability performance of small and medium-sized enterprises (SMEs) in Surakarta, Indonesia. Corporate Social Responsibility (CSR) is conceptualized as a mediating variable, while top management commitment is assessed as a moderating factor. A quantitative, causal-explanatory approach was employed, drawing on survey data from 311 SMEs. The data were analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS) via SmartPLS 4.0. The results indicate that both green corporate governance and green accounting significantly and positively influence CSR and sustainability performance. Government intervention is positively associated with CSR, yet its direct effect on sustainability performance is negative. Green organizational culture exhibits a significant positive impact on both CSR and sustainability outcomes. Furthermore, CSR mediates the relationships between the four independent variables and sustainability performance. Top management commitment was found to positively moderate the link between CSR and sustainability outcomes. From a theoretical perspective, this research advances the application of the Resource-Based View (RBV) and stakeholder theory in the context of SME sustainability. Practically, the findings highlight the need to strengthen the capacity of SMEs in digital-based environmental governance and reporting practices. The study also calls for more effective, inclusive policy interventions to accelerate green transformation processes at the SME level.

Keyword: Green Governance, Green Accounting, SMEs, CSR, Sustainable Performance, Indonesia.

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INTRODUCTION

Sustainability has emerged as an urgent global concern, compelling enterprises across all sectors and scales to incorporate environmental and social considerations into their operations, including small and medium-sized enterprises (SMEs) (Elkington, 1994; United Nations Global Compact, 2020). The concept of sustainable development was initially framed through the "Triple Bottom Line" approach proposed by Elkington (1998), emphasizing the integration of economic, environmental, and social dimensions. This framework has since evolved into the "Pentuple Bottom Line" (5P), which incorporates phenotechnology and spiritual values (Prophet), highlighting the importance of aligning economic profits, ecological conservation, technological advancement, and socio-spiritual ethics (Sukoharsono, 2019).

SMEs are critical contributors to economic systems worldwide (Olayemi et al., 2022). In Indonesia, Micro, Small, and Medium Enterprises (MSMEs) form the backbone of the national economy, accounting for approximately 61% of the country's GDP and employing around 97% of the workforce (Katadata, 2024; BPS, 2024). Despite this substantial contribution, the integration of sustainability practices among MSMEs remains considerably low. A national survey conducted by Statistics Indonesia (BPS, 2021) revealed that over 70% of SMEs in Surakarta have yet to implement basic sustainability practices such as waste management and energy efficiency.

This challenge is further exacerbated by increasing environmental degradation, particularly water pollution caused by wastewater from batik and tofu industries, which often exceeds national standards for Total Suspended Solids (TSS) and Chemical Oxygen Demand (COD) thresholds (Environmental and Forestry Agency, 2018; Lestari et al., 2020). These issues highlight the pressing need for systemic efforts to enhance sustainability awareness and adoption among SMEs operating in urban and semi-urban areas in Indonesia.

The sustainability of Indonesian SMEs has faced serious challenges, particularly during the COVID-19 pandemic. Data from the Ministry of Cooperatives and SMEs indicated that approximately 47% of SMEs ceased operations during the early stages of the crisis (Tempo Bisniscom, 2020). In Central Java alone, more than 3,000 SMEs and 420 cooperatives experienced disruptions, mainly due to supply chain breakdowns and limited market access (Suwiknyo, 2020). A survey by the Asian Development Bank (ADB, 2020) further revealed that inadequate governance structures were a major cause of SME vulnerability during the pandemic (Rinaldo et al., 2023).

Recent literature underscores the importance of sustainability performance as a strategic imperative for SMEs (Lopes de Sousa Jabbour et al., 2020; Olayemi et al., 2022; Karuppiah et al., 2023; Chen, 2022). While large corporations increasingly embed sustainability into their core strategies (KPMG, 2022; Fandeli et al., 2020), SMEs often lag behind due to limited environmental knowledge, high implementation costs, weak institutional environments, and the absence of regulatory frameworks or practical guidelines (Das et al., 2020a). In developing countries, SMEs also struggle with broader social issues such as poverty, inadequate living conditions, child labor, and occupational health risks (World Bank, 2014).

Two key drivers of organizational sustainability identified in the literature are green corporate governance and green accounting (Burritt et al., 2019; S. Wang & Huang, 2022; Shaikh et al., 2024). Effective green governance enables firms to make strategic decisions that account for the interests of a broad range of stakeholders, including environmental and social constituents (Aguilera et al., 2021; Mahmood & Orazalin, 2017). SMEs, particularly in the Indonesian context, are urged to adopt green accounting not only because of their economic significance but also due to their role as contributors to environmental degradation through waste generation (Yuliana & Sulistyawati, 2021).

Empirical evidence on the relationship between governance and sustainability performance remains mixed. Several studies affirm a significant positive effect of corporate governance on sustainability outcomes (Jaffar Abbas et al., 2019; Yasrawan & Werastuti, 2022; Tan & Zarefar, 2022; Chairina & Tjahjadi, 2023; L. Wang et al., 2023). However, other findings indicate non-significant or even negative relationships between governance structures and financial performance (Tricahya Avilya & Ghazali, 2022; Rahayu & Ramadhanti, 2019). These inconsistencies may reflect suboptimal implementation of governance principles due to limited resources and weak organizational capabilities, which ultimately undermine profitability.

Barriers to the implementation of green governance in SMEs include limited access to reliable business data, the absence of formal organizational structures, and the dominance of owner-managed models that resist externally imposed sustainability practices (Akomea-Frimpong et al., 2022; Sadeh et al., 2021; Committee on the Financial Aspects of Corporate Governance & Cadbury, 1992). Das et al. (2021) highlight that sustainability frameworks are rarely embedded in SMEs due to centralized decision-making by individual owners. Moreover, many governance principles are tailored for large corporations and may be ill-suited for small enterprises without significant adaptation (Dwaikat et al., 2020; Rinaldo et al., 2023).

Green accounting, which forms the basis of sustainability reporting, plays a dual role by enhancing both internal transparency and external accountability. While environmental and social disclosures can deliver value, they may also pose reputational or regulatory risks depending on how they are managed (Naciti et al., 2022; Santoso & Maulidani, 2022; Damaianti, 2022; Tino & Sudana, 2025). Several studies have reported a significant positive impact of green accounting on corporate sustainability (Sun et al., 2022; Jan et al., 2021). Through resource efficiency, cost savings, brand enhancement, and improved access to finance, green accounting can support better overall performance. It also contributes to the completeness of financial reporting by incorporating environmental costs and impacts (Kusumawati et al., 2023). However, other research indicates that when measured by environmental performance and costs alone, green accounting does not significantly influence CSR disclosure (Lucian, 2022; Sukma Pratiwi & Hidayah, 2023).

Green accounting awareness reflects an organization's capability to integrate environmental considerations into its daily operations and managerial decisions (Canh et al., 2019). Despite its importance, many SMEs continue to encounter difficulties in implementing green accounting practices effectively. Prior studies have emphasized that understanding the influence of green governance and green accounting on sustainability performance necessitates a moderating role from top management commitment (Rounaghi, 2019; L. Wang et al., 2023). In this regard, top executives play a pivotal role in initiating and fostering eco-friendly practices within organizations (Wijethilake & Lama, 2019). Their involvement is vital in promoting corporate environmental and social responsibility initiatives (Tandoh et al., 2022; Greiner & Sun, 2021; Yusliza et al., 2019; Chatterjee et al., 2022).

From a broader perspective, sustainable business leaders must acknowledge corporate social responsibility (CSR) as a mechanism to balance and restore environmental and societal harm caused by business operations (Kusumawati et al., 2023; Muliati et al., 2020). In Indonesia, CSR practices and disclosures are regulated by Law No. 40/2007 on Limited Liability Companies, particularly Articles 66 and 74, which stipulate CSR as a mandatory component of corporate operations (Dariati & Masmudah, 2020). For SMEs, CSR obligations are governed by Government Regulation No. 47/2012 and Ministry of Social Affairs Regulation No. 13/2012, mandating a minimum of 2% of annual net profit be allocated for social and environmental activities (Trisnawati et al., 2021).

Cultural dimensions also shape CSR adoption. In the Indonesian context, especially in Javanese culture, CSR is culturally rooted in the concept of *pager mangkok*, a traditional norm emphasizing communal care (Yulianti Indah, 2023). Nevertheless, criticisms exist regarding the effectiveness of CSR regulation, as the absence of legal sanctions for non-compliance has led many firms to treat CSR as a public relations strategy, resulting in greenwashing practices (Pujiyono et al., 2017; SGEM, 2015). Supporting this view, Mo et al. (2022) and Chen (2022) report that although SMEs represent 90% of firms globally, their CSR reporting accounts for less than 10% of total disclosures based on the Global Reporting Initiative (GRI) database. Institutional weaknesses remain a major constraint for SMEs in emerging economies. Das et al. (2020a) and Graafland & Bovenberg (2020) highlight that the absence of supportive regulatory environments, lack of coherent policy frameworks, and unavailability of practical guidelines hinder the adoption of sustainability practices. Jusuf Irianto, a professor of public administration at Universitas Airlangga, argued that the government must actively support and protect SMEs, as their sustainability cannot be secured without strategic regulatory interventions (Republica Online, 23 September 2023).

Scholars suggest that government intervention is essential in sustaining SME development, through both soft policy mechanisms and managerial tools tailored to SMEs' needs, alongside financial and non-financial support (Pratiwi, 2022; Songling et al., 2018). Given their resource and technological limitations, SMEs can leverage intangible and low-cost assets—particularly organizational culture—as a viable strategy for sustainability advancement (M. Das & Rangarajan, 2020). Organizational culture is a rational strategic option, as it can be consciously cultivated to align with sustainability values. Wang & Huang (2022) confirm that sustainability performance in SMEs is positively influenced by the internal organizational culture. However, empirical research exploring the direct impact of organizational culture on SME sustainability remains limited and underexplored (M. Das & Rangarajan, 2020). The novelty of this study lies in the integration of models from Wang et al. (2023), Wang & Huang (2022), and Das et al. (2020a), proposing a mediated and moderated framework to analyze sustainability performance in SMEs, with empirical evidence from Surakarta City, Indonesia.

2. Literature Review and Hypothesis Development

2.1 Green Corporate Governance and Corporate Social Responsibility (CSR) among SMEs in Surakarta

Corporate governance, as defined by Tiep Le and Nguyen (2022), encompasses a system of rules, ethical codes, processes, and organizational structures that promote sound business practices. According to the OECD,

good corporate governance (GCG) is built on the principles of fairness, accountability, transparency, and responsibility (Setyaningrum et al., 2023). While these principles are typically designed for large corporations, they require adaptation when applied to micro, small, and medium enterprises (MSMEs) to ensure they are practical and not burdensome (Rinaldo et al., 2023).

Green corporate governance (GCGreen), as proposed by Mahmood and Orazalin (2017) and L. Wang et al. (2023), serves as an institutional mechanism to reconcile the tensions between environmental and economic objectives. Governance systems play a pivotal role in supporting CSR initiatives, as firms with strong governance structures are more likely to effectively implement socially responsible practices. From the stakeholder theory perspective, CSR practices enhance internal productivity while simultaneously preserving external stakeholder trust and reputation (X. Wang & Bian, 2022).

Empirical studies such as Zhang et al. (2022) have shown that stakeholder-oriented governance positively influences CSR engagement. Similarly, Martinez-Conesa et al. (2017) and L. Wang et al. (2023) demonstrated a significant positive relationship between board gender diversity and CSR performance. In contrast, Mahmood and Orazalin (2017) found that in Kazakhstan's oil and gas sector, governance mechanisms had limited influence on sustainability reporting due to regulatory inconsistencies and weak managerial commitment. Das and Rangarajan (2020) also noted that sustainability practices tend to be more prevalent in larger, well-established firms, while MSMEs in emerging markets often overlook social and environmental responsibilities.

H₁: Green corporate governance has a significant effect on corporate social responsibility among MSMEs in Surakarta, Indonesia.

2.2 Green Corporate Governance and Sustainability Performance among SMEs in Surakarta

Sustainable governance refers to corporate strategies and behaviors that integrate the distribution of rights and responsibilities in response to environmental sustainability challenges (Aguilera et al., 2021). Green corporate governance integrates environmental considerations into corporate oversight mechanisms, such as board structures, decision-making processes, and accountability systems. The Sustainable Development Goals (SDGs) offer a guiding framework for this integration (Shaikh et al., 2024).

A well-functioning governance system enhances control and monitoring mechanisms, which are critical for achieving sustainability performance. Yao et al. (2023) showed that environmental governance can be substantially improved through carbon trading schemes. Furthermore, Tiep Le and Nguyen (2022) found that corporate governance positively impacts firm value in developing economies. A growing body of research (Tan & Zarefar, 2022; Werastuti, 2022; Chairina & Tjahjadi, 2023) also confirms the positive relationship between corporate governance and sustainability outcomes.

However, other studies present contrasting findings. Salira and Fauzan (2022) and Tricahya Avilya and Ghozali (2022) found no significant impact of corporate governance on financial performance. Rahayu and Ramadhanti (2019) even reported a negative relationship, suggesting that poorly managed governance structures may hinder profitability due to inefficient resource allocation.

H₂: Green corporate governance has a significant effect on sustainability performance among MSMEs in Surakarta, Indonesia.

2.3 Green Accounting and Corporate Social Responsibility among SMEs in Surakarta

Green accounting, or environmental accounting, refers to the practice of incorporating environmental costs into financial decision-making and performance reports (Rounaghi, 2019; Ahmad et al., 2022). It involves recognizing and reporting environmental expenditures and sustainability investments within financial statements (Indriastuti & Mutamimah, 2023). CSR, on the other hand, pertains to a firm's obligation to account for social and environmental aspects in its business activities, including stakeholder engagement with employees, communities, and the natural environment (Martinez-Conesa et al., 2017).

Salira and Fauzan (2022) found that green accounting has a significant positive effect on CSR initiatives. Supporting this, Benson et al. (2021) found that green accounting in Nigeria's oil and gas sector enhanced environmental transparency and CSR compliance. In contrast, studies by Pratiwi (2022), Sukma Pratiwi and Hidayah (2023), and Indriastuti and Mutamimah (2023) revealed no significant influence of environmental accounting on CSR disclosure, indicating potential contextual or implementation challenges.

H₃: Green accounting has a significant effect on corporate social responsibility among MSMEs in Surakarta, Indonesia.

2.4 Green Accounting and Sustainability Performance among SMEs in Surakarta

According to Marota (2017), green concepts have a substantial impact on sustainability. Sustainability performance reflects an organization's success across economic, social, and environmental dimensions, including resource efficiency, waste reduction, and regulatory compliance. As argued by Simon (2014) and further supported by Yasrawan & Werastuti (2022) and Ratulangi et al. (2018), green accounting can reduce

environmental costs, enhance the accuracy of production cost analysis, and improve profitability through the implementation of environmentally conscious business strategies.

Huang and Mirza (2023) emphasized that MSMEs adopting green accounting aim not only for financial gain but also for environmental and social responsibility. In alignment with stakeholder theory, environmentally responsive accounting systems promote efficiency and long-term business viability. Kusumawardhany (2022) observed that green accounting significantly contributes to ethical values and profitability in MSMEs, while Rounaghi (2019) and L. Wang et al. (2023) confirmed the positive effect of green accounting on sustainability outcomes, particularly when supported by strong managerial commitment. However, Salira (2022) reported no significant link between green accounting and profitability in Indonesia's energy sector. Linnenluecke and Griffiths (2010) further noted that organizational culture can often hinder the successful implementation of green accounting practices.

H₄: Green accounting has a significant effect on sustainability performance among MSMEs in Surakarta, Indonesia.

2.5 Government Intervention and Corporate Social Responsibility among SMEs in Surakarta

Government intervention plays a pivotal role in promoting corporate social responsibility (CSR) within small and medium-sized enterprises (SMEs). According to Series et al. (2021), government efforts to mitigate environmental degradation caused by business activities are essential. Such interventions, typically in the form of policies and regulations, aim to encourage SMEs to adopt more responsible and sustainable business practices. Regulatory frameworks on environmental pollution require companies to engage in CSR activities, thereby contributing to sustainable production practices. Rather than focusing solely on maximizing profit through mass production, businesses are expected to invest adequately in CSR and consider their environmental impacts.

Wiredu et al. (2023) emphasized that government initiatives aimed at promoting CSR are designed to raise corporate awareness regarding normative compliance with environmental responsibilities. These policies often emerge in response to public concerns over environmental degradation. Similarly, Jain and Jamali (2016) assert that government involvement is crucial in motivating SMEs to address both social and environmental dimensions of their operations. Sinha and Dhall (2020) further found that strict governmental regulations can enhance corporate investment in CSR, while Tiep Le and Nguyen (2022) emphasized that regulatory enforcement encourages active CSR participation. However, Jain and Jamali (2016) also noted that in some instances, CSR practices are merely symbolic responses to regulations, lacking substantive contributions to sustainability. Based on the above discussion, the following hypothesis is proposed:

H₅: Government intervention has a significant effect on corporate social responsibility among SMEs in Surakarta.

2.6 Government Intervention and Sustainability Performance of SMEs in Surakarta

Government intervention also plays a critical role in enhancing the sustainability performance of SMEs. In Surakarta, various policies have been implemented to support the integration of sustainability principles into SME operations. For example, the "Solo Green Business" program was introduced to raise awareness and build SME capacity in adopting green business practices. Nevertheless, the effectiveness of such programs remains limited due to barriers such as restricted access to green financing and eco-friendly technologies. Government intervention in this context encompasses regulatory support, financial and non-financial incentives, and other assistance aimed at fostering business sustainability.

Empirical evidence from Sadeh et al. (2021) and Rao et al. (2023) demonstrates that government support through green innovation policies, financial access, and sustainability education can significantly enhance the sustainability performance of SMEs. When adequate regulatory support and incentives are provided, SMEs are more likely to implement green business practices, thereby improving their long-term performance. The importance of such intervention became particularly evident during the COVID-19 pandemic, when governments in OECD countries sought alternative strategies to sustain economic growth and technological development in a sustainable manner. These efforts positively influenced the development of sustainable technologies.

Rao et al. (2023) also noted that government policies promoting green technologies can improve energy efficiency and optimize energy structures, supporting dual-carbon goals. In alignment, studies by M. Das et al. (2020a, 2020b), and Rakhmawati et al. (2020) found that effective government policies such as green innovation incentives, sustainability management tools, and recognition for innovation contribute positively to SME sustainability. Songling et al. (2018) further highlighted the importance of both financial and non-financial government support. Hussain et al. (2018) confirmed that pro-sustainability policies improve both social and environmental performance. Mahmood and Orazalin (2017), as well as Lutfi et al. (2023), observed that stringent regulations enhance the quality of sustainability reporting and strengthen SMEs' competitive positioning. Conversely, studies by Harjito and Novita Sari (2017) and Sukoharsono (2019) revealed that in

East Java, government policies had no significant impact on SME performance due to weak policy implementation and limited SME participation. Similarly, Shaikh et al. (2024) found that while some SMEs comply with regulations, they do not implement meaningful sustainability improvements. Based on the literature review, the following hypothesis is proposed:

H₆: Government intervention has a significant effect on the sustainability performance of SMEs in Surakarta.

2.7 Green Organizational Culture and Corporate Social Responsibility among SMEs in Surakarta

According to Muliati et al. (2020), a business seeking long-term sustainability must internalize CSR as a core necessity, integrating it into the company's vision, mission, strategy, cultural values, and operational policies. Rasyid et al. (2023) argued that organizational culture, when aligned with social strategies, enhances employee motivation and personal management, effectively mitigating individual risks. Studies have consistently shown a positive correlation between organizational culture and performance outcomes (Tulcanaza-Prieto et al., 2021), though the specific type of performance impacted may vary. Wang and Huang (2022), and C. H. Wang (2019), emphasized that green organizational culture shapes internal thinking patterns and designates employees as key agents of change.

Green organizational culture, grounded in environmental values, enables the integration of eco-friendly practices across various organizational functions (C. H. Wang, 2019; Wan et al., 2020; Muliati et al., 2020). According to Mohamed Adnan et al. (2018) and C. H. Wang (2019), culture significantly influences corporate decisions and actions, including CSR disclosure. Given the resource limitations of SMEs, developing competitive advantage and value creation may rely heavily on CSR adoption, a strong organizational culture, and effective leadership (Kustianti & Murwaningsari, 2023). However, Mahmood and Orazalin (2017) cautioned that green culture alone may not significantly impact CSR without top management commitment. Fandeli et al. (2020) also found that the influence of green culture is contingent upon robust policy support. Therefore, differing cultural contexts may produce varying outcomes. Based on the discussion above, the following hypothesis is formulated:

H₇: Green organizational culture has a significant effect on corporate social responsibility among SMEs in Surakarta.

2.8 Green Organizational Culture and Its Influence on Sustainability Performance in SMEs in Surakarta

Banerjee (2002) argues that environmental culture (EC) represents a critical organizational resource that can contribute to enhanced business performance. EC reflects the extent to which a company has internalized environmental values across its operations, often articulated through mission statements, formal policies and procedures, employee training programs, and managerial communication. Environmentally oriented cultures yield numerous benefits, including favorable stakeholder perceptions, employee satisfaction, and greater organizational adaptability (Karaosman et al., 2020). As such, environmental culture serves as a strategic asset enabling firms to translate proactive environmental strategies into superior performance outcomes.

The adoption of environmentally friendly practices across the organization fosters a transformation toward a green organizational culture (GOC). Prior research has shown that GOC enhances productivity, strengthens corporate image (Leonidou et al., 2015), fosters innovation and creativity (Irfan et al., 2022; Z. Zhang et al., 2022), and provides a competitive advantage (Banerjee, 2002). Moreover, organizational culture is a recognized determinant of business performance (Eniola et al., 2019; Santoso & Maulidani, 2022; Herman et al., 2021). Wang (2019) confirms that GOC positively impacts both CSR implementation and sustainability performance in the manufacturing sector. Yang et al. (2021) similarly emphasize that companies with stronger green cultures are more likely to engage in impactful CSR activities that support long-term performance. Supporting studies (S. Wang & Huang, 2022; Galpin et al., 2015) have noted that corporate culture contributes to sustainable development, whereas other works (Padilla-Lozano & Collazzo, 2022; Sinha & Dhall, 2020) suggest that organizational culture has either no significant effect or a negative effect on sustainability.

H₈: Green organizational culture significantly influences the sustainability performance of SMEs in Surakarta.

2.9 Corporate Social Responsibility and Its Effect on Sustainability Performance of SMEs in Surakarta

Corporate Social Responsibility (CSR) encompasses a firm's accountability for its social and environmental impacts, including fair business practices, employee welfare, community contributions, and environmental stewardship (Carroll & Shabana, 2010). While CSR has been extensively studied in large firms, its relevance in SMEs remains underexplored. As an emerging business sector, SMEs in Surakarta must recognize CSR as a potential strategic lever for enhancing sustainability outcomes. CSR functions as a mechanism for improving long-term business resilience (Bahta et al., 2021).

Several studies (Tandoh et al., 2022; Sarmawa et al., 2021) affirm the positive and significant relationship between CSR practices and sustainability performance. CSR not only enhances corporate reputation but also attracts environmentally conscious consumers, thereby increasing profitability and financial

performance (Sukma Pratiwi & Hidayah, 2023; Shaikh et al., 2024). In contrast, research in specific sectors such as oil and gas (Yahaya & Nadarajah, 2023; Mahmood & Orazalin, 2017) finds that CSR's impact on sustainability is limited in the absence of strict government regulation. Other studies (Series et al., 2021; Mohamed Adnan et al., 2018; Kusumawardhany, 2022) indicate that the lack of resources and cost constraints can prevent SMEs from effectively implementing CSR, thereby diminishing its role in promoting sustainability.

H₉: Corporate Social Responsibility has a significant positive effect on the sustainability performance of SMEs in Surakarta.

2.10 The Mediating Role of CSR in the Relationship Between Green Corporate Governance and Sustainability Performance in SMEs

CSR refers to corporate initiatives that reflect a firm's responsibility toward its surrounding environment and society (Rajput et al., 2012). It involves a company's commitment to contributing to sustainable social, economic, and environmental development (Dahlia et al., 2024). Effective CSR practices enhance sustainability performance by helping SMEs comply with regulations, improve customer loyalty, and access better resources.

Corporate governance mechanisms, especially green governance structures, are essential in shaping CSR disclosures and practices. The more proactive a firm is in implementing CSR, the more evident its commitment to community and environmental welfare. Research by Wang et al. (2023) confirms the mediating role of CSR between green corporate governance and sustainability performance. Similar findings have been reported by Mahmood and Orazalin (2017), especially in SME contexts, and Martinez-Conesa et al. (2017), who emphasize CSR's mediation role in advancing environmental and social sustainability. Conversely, Lucian (2022) finds that CSR does not mediate the relationship between green accounting and sustainability outcomes.

H₁₀: CSR mediates the relationship between green corporate governance and the sustainability performance of SMEs in Surakarta.

2.11 The Mediating Role of CSR in the Relationship Between Green Accounting and Sustainability Performance in SMEs

Green accounting, also referred to as environmental cost accounting, refers to tracking and managing the environmental costs associated with a firm's operations (Saputra, 2020; Yuliana & Sulistyawati, 2021). By increasing transparency in environmental expenditures, green accounting can promote CSR practices, which in turn support the adoption of sustainable business strategies. In the long run, CSR enhances business reputation and improves sustainability performance by attracting environmentally and socially conscious stakeholders.

Justita Dura and Riyanto Suharsono (2022) found that green accounting positively impacts sustainable development, with CSR acting as a mediator. Similarly, Handayani and Hidayati (2022) noted that CSR improves innovation and financial performance in SMEs, emphasizing its complementary role alongside green accounting. Further evidence from Sarmawa et al. (2021) and Tino & Sudana (2025) supports CSR's mediating role between green accounting and profitability. However, contradictory findings by Lucian (2022) and Sukma Pratiwi & Hidayah (2023) suggest that in certain non-financial sectors, CSR may not significantly mediate the green accounting–sustainability relationship.

H₁₁: CSR mediates the relationship between green accounting and the sustainability performance of SMEs in Surakarta.

2.12 Corporate Social Responsibility as a Mediator in the Relationship Between Green Organizational Culture and Sustainability Performance of MSMEs in Surakarta City

Green organizational culture encompasses shared beliefs, values, norms, symbols, and social stereotypes that guide environmental practices within an organization, shaping the expected behaviors of individuals (Sherly & Murwaningsari, 2023). It reflects the transformation of organizational processes towards more environmentally responsible practices aimed at enhancing the efficiency of both renewable and non-renewable resource usage, reducing pollution, and fostering sustainable operations—commonly referred to as “greening” efforts.

In resource-constrained contexts such as micro, small, and medium-sized enterprises (MSMEs), achieving competitive advantage can be supported by cultivating a strong green organizational culture, clear leadership, and the implementation of corporate social responsibility (CSR) practices that enable value creation (Foss & Saebi, 2017). According to Chen (2022), CSR adoption by MSMEs fosters business model innovation and highlights the mediating role of organizational culture in linking CSR to innovation outcomes. Furthermore, Martins et al. (2022) suggest that CSR serves as a key indicator of a green organizational culture. In this view, green organizational culture is characterized by environmentally conscious practices and sustainability-oriented values, which are often manifested through CSR activities. Building on this theoretical foundation, this study proposes the following hypothesis:

H12: Corporate social responsibility mediates the effect of green organizational culture on the sustainability performance of MSMEs in Surakarta City.

According to Sherly and Murwaningsari (2023), green organizational culture refers to shared values, beliefs, norms, symbols, and social stereotypes that shape environmentally oriented organizational behavior. It entails transforming organizational processes to become more eco-friendly by enhancing the efficiency of both renewable and non-renewable resource use, reducing pollution, and promoting sustainable operations—an initiative commonly referred to as “greening.”

Given their limited resources, SMEs may foster competitive advantage through value creation, which can be supported by adopting corporate social responsibility (CSR) practices, cultivating a robust organizational culture, and ensuring clear leadership (Foss & Saebi, 2017). Chen (2022) found that SMEs implementing CSR initiatives can encourage business model innovation, with corporate culture serving as a mediating mechanism between CSR and innovation outcomes. In addition, Martins et al. (2022) assert that CSR can serve as a benchmark for green organizational culture. Green culture in this context reflects environmental awareness and sustainability consciousness, often captured through CSR metrics.

Based on these findings, the following hypothesis is proposed:

H12: Corporate social responsibility mediates the effect of green organizational culture on the sustainability performance of SMEs in Surakarta.

2.13 The Moderating Role of Top Management Commitment on the Relationship Between Corporate Social Responsibility and Sustainability Performance of SMEs in Surakarta

SMEs in Surakarta face significant challenges in adopting sustainability practices. One of the critical factors influencing the success of these initiatives is the commitment of top management. Top management commitment reflects the willingness and active involvement of senior executives in supporting sustainability policies and integrating CSR into business operations. This commitment enhances the link between CSR and sustainability performance, as top management is responsible for allocating resources and ensuring the strategic alignment of CSR initiatives. Strategic decisions supporting sustainability tend to be more effective when endorsed by top leadership. Without this commitment, CSR may be viewed as a short-term initiative rather than a long-term strategic imperative. Wijethilake and Lama (2019) emphasize the crucial role of top management commitment in the success of corporate sustainability strategies. Yusliza et al. (2019) report a significant association between top management commitment, CSR, and sustainability performance. Wang et al. (2023) further demonstrate that top management commitment moderates the relationship between CSR and sustainability performance among SMEs in China.

However, contrasting evidence from Tandoh et al. (2022) indicates that the moderating effect of top management commitment may vary depending on the external pressures faced by the organization. Greiner and Sun (2021) note that not all executives possess sufficient understanding of sustainability, which may hinder the integration of CSR practices into business strategies. Drawing on the resource-based view (RBV), top management commitment and CSR are considered valuable internal resources that can create competitive advantages in sustainability. Stakeholder theory also underscores the role of management in balancing the interests of various stakeholders, including shareholders, customers, and the broader community. Based on this theoretical and empirical foundation, the following hypothesis is proposed:

H₁₄: Top management commitment moderates the relationship between corporate social responsibility and sustainability performance of SMEs in Surakarta.

3. RESEARCH METHODOLOGY

This study employs a quantitative approach using a causal explanatory design. As suggested by Hair et al. (2019), causal explanatory research aims to investigate cause-and-effect relationships between variables through hypothesis testing. Primary data were collected using a structured questionnaire as the main research instrument. Structural Equation Modeling with Partial Least Squares (SEM-PLS) was employed for data analysis. The study population comprises 1,413 SMEs operating in Surakarta. Following Sarstedt et al. (2020), the recommended sample size in SEM-PLS is ten times the number of indicators. Using Slovin's formula, the final sample consists of 311 SMEs.

3.1 Variables and Measurement

The green corporate governance construct in this study is based on the general principles of corporate governance issued by the National Committee on Governance Policy, which includes transparency,

accountability, responsibility, independence, fairness, and equity. These principles, typically designed for large corporations, require modification to be applicable and beneficial for SMEs without imposing excessive burdens (Rinaldo et al., 2023). The green corporate governance indicators are adopted from Adolph (2016), Akuntansi et al. (2021), and Rinaldo et al. (2023).

Green accounting indicators are derived from Moorthy and Yacob (2013), while government intervention indicators are based on Das et al. (2020a). Green organizational culture is measured using indicators from Fraj et al. (2011). CSR indicators are adopted from Homayoun et al. (2023), Guerrero-Villegas et al. (2018), Martinez-Conesa et al. (2017), and selected items from the GRI-G4 framework relevant to Indonesian SMEs. The top management commitment construct is based on Wijethilake and Lama (2019).

Sustainability performance is measured using the pentuple bottom line framework proposed by Wardokhi et al. (2023), which includes five dimensions: profit, planet, people, prophet (spiritual), and phenotechnology. Specifically, the 'people' dimension comprises two indicators, 'profit' includes four indicators, 'phenotechnology' is measured with one indicator, 'planet' with two indicators, and 'prophet' with three indicators.

4. Research Framework

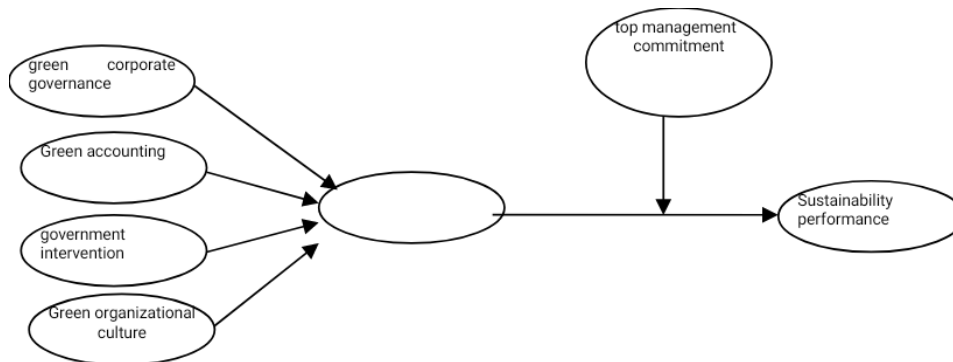


Figure. Research Model

5. Data Analysis and Results

5.1 Measurement Model Assessment (Outer Model)

The measurement model is used to evaluate the relationships between observed indicators and their respective latent constructs. According to Hair et al. (2019), the primary objective of assessing the outer model is to ensure that the indicators associated with each latent variable demonstrate acceptable levels of convergent and discriminant validity.

Convergent Validity

Convergent validity was assessed using factor loadings and the Average Variance Extracted (AVE). As recommended by Sarstedt et al. (2020), a factor loading greater than 0.70 is considered ideal, indicating that the indicator adequately represents the latent construct. Furthermore, an AVE value exceeding 0.50 signifies sufficient convergent validity. In this study, indicators with factor loadings below 0.70 were excluded from further analysis due to insufficient validity.

Discriminant Validity

Discriminant validity was evaluated using the Heterotrait-Monotrait Ratio (HTMT). Hair et al. (2019) assert that HTMT is a more reliable and sensitive criterion for assessing discriminant validity. An HTMT value below 0.90 indicates that discriminant validity is achieved. Based on the results, all HTMT values fell below the 0.90 threshold, confirming the discriminant validity of the constructs used in this study.

Reliability Testing

Reliability testing was conducted to verify the consistency and accuracy of the measurement instruments in capturing the underlying constructs. In the context of PLS-SEM, the reliability of the measurement model is confirmed when both the Composite Reliability (CR) and Cronbach's Alpha values exceed 0.70 (Hair et al., 2019). The results show that all constructs met this criterion, indicating that the indicators used are consistent and reliable for measuring their respective latent variables. This implies that the indicators are dependable in explaining the variance of the items within each construct.

5. 2 Structural Model Evaluation (Inner Model)

One of the key assumptions in evaluating the inner model using Partial Least Squares (PLS) is the absence of multicollinearity among constructs. SmartPLS version 3 utilizes the Variance Inflation Factor (VIF) to assess multicollinearity. According to Sarstedt et al. (2017) and Hair et al. (2021), a VIF value below 5 is indicative of no multicollinearity problems, while values above 5 suggest potential collinearity issues. As presented in Table 1, all VIF values were below the critical threshold of 5, confirming that the structural model does not suffer from multicollinearity.

Table 1. Variance Inflation Factor (VIF) Values of the Structural Model

Predictor Variable	CSR(Z ₁)	Sustainability Performance (Y)
Corporate Governance (X ₁)	2,016	4,035
Accounting (X ₂)	2,451	1,818
Government Intervention (X ₃)	2,423	4,380
Organizational Culture (X ₄)	2,369	2,479
Corporate Social Responsibility (Z ₁)	-	2,451
Management Commitment (Z ₂)	-	2,016

Inner Model Evaluation

The evaluation of the inner model was conducted to measure the strength of the relationship between corporate social responsibility (CSR) and sustainability performance among MSMEs in Surakarta City. The assessment relied on adjusted R-squared values and predictive relevance (Q²). As presented in Table 2, the adjusted R² value of 0.916 for the model explaining CSR from green corporate governance, green accounting, government intervention, and green organizational culture indicates a strong model fit. Likewise, the adjusted R² value of 0.987 for the model explaining sustainability performance from the same predictors, as well as CSR and top management commitment, reflects an even stronger explanatory power. Predictive relevance (Q²) was also calculated, with values exceeding zero indicating acceptable predictive capacity. The Q² value of 0.421 for CSR and 0.434 for sustainability performance suggest a moderate predictive relevance, consistent with the criteria outlined by Hair et al. (2019).

Table 2. Coefficient of Determination and Predictive Relevance

Dependent Variable	Adjusted R ²	Q ² (=1-SSE/SSO)
Sustainability Performance	0.987	0.421
Corporate Social Responsibility	0.916	0.434

Hypothesis Testing

Table 3. Direct Hypothesis Testing Results

Hypothesis	Path Coefficient	P Value	f ²
Green Corporate Governance → CSR	0.843	0.000	0.841
Green Corporate Governance → Sustainability Performance	0.456	0.000	0.482
Green Accounting → CSR	0.232	0.000	1.209
Green Accounting → Sustainability Performance	0.336	0.000	2.820
Government Intervention → CSR	0.147	0.000	0.018
Government Intervention → Sustainability Performance	-0.245	0.000	0.037
Green Organizational Culture → CSR	-0.245	0.000	0.014

Green Organizational Culture → Sustainability Performance	0.369	0.000	5.3 16
CSR → Sustainability Performance	-0.303	0.000	0.1 02

The direct hypotheses were evaluated using path coefficients and significance testing with a threshold of $p < 0.05$. The effect size (f^2) was used to measure the magnitude of influence, classified as small (0.02), medium (0.15), or large (0.35) (Ketchen, 2013; Hair et al., 2019). The results indicate that hypotheses H_1 , H_2 , H_3 , H_4 , H_5 , and H_8 are supported, with positive and significant effects ($p < 0.05$) and f^2 values exceeding 0.02. The strongest effect was observed in H_1 , where green corporate governance significantly and positively influenced CSR. Conversely, H_6 , H_7 , and H_9 also showed significant effects ($p < 0.05$), but with negative path coefficients, suggesting a significant negative relationship between the corresponding independent and dependent variables.

Table 4. Indirect Hypothesis Testing (Mediation Analysis)

Hypothesis	Path Coefficient	P-Value	Upsilon V
Green Corporate Governance → CSR → Sustainability Performance	-0.255	0.000	0.065
Green Accounting → CSR → Sustainability Performance	-0.070	0.000	0.004
Government Intervention → CSR → Sustainability Performance	-0.045	0.000	0.002
Green Organizational Culture → CSR → Sustainability Performance	0.074	0.001	0.005

The indirect hypotheses (mediation effects) were tested using path coefficients and p-values with the threshold of $p < 0.05$. Following Ogbeibu et al. (2021), the upsilon statistic ($V = \beta_{MX} \times \beta_{YM.X}$) was used to evaluate the strength of mediation: low (0.01), medium (0.075), or high (0.175). As shown in Table 4, H_{10} , H_{11} , and H_{12} exhibited negative path coefficients and significant p-values, indicating supported hypotheses with low mediation effects. Hypothesis H_{13} showed a positive path coefficient and significant p-value, also confirming support but with a low mediation effect.

Table 5. Indirect Hypothesis Testing (Moderation Analysis)

Hypothesis	Path Coefficient	p-values	f-square
Top Management Commitment → Sustainability Performance	0.439	0.00 0	0.004
Moderating Effect of Top Management Commitment → Sustainability Performance	0.028	0.00 0	0.004

The moderation analysis presented in Table 5 evaluates indirect effects using path coefficients and significance tests (p -values < 0.05), with effect sizes interpreted via f-square values. Based on Hair et al. (2019), f-square values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. The results indicate that Hypothesis H_{14} is supported: the path coefficient is positive and statistically significant ($p < 0.05$). However, the f-square value is 0.004, suggesting that top management commitment does not exert a meaningful moderating influence on the relationship between corporate social responsibility (CSR) and sustainability performance. As Hair et al. (2019) noted, an f-square value below 0.02 can be considered negligible. This finding implies that other moderating variables might be more relevant for enhancing the CSR–sustainability performance linkage in the SME context.

6. DISCUSSION

6.1 The Effect of Green Corporate Governance on Corporate Social Responsibility and Sustainability Performance of SMEs in Surakarta City

The findings confirm Hypothesis H_1 , indicating that green corporate governance (GCG) significantly and positively influences CSR among SMEs in Surakarta. This result is consistent with previous studies by Wang et al. (2023) and Martins et al. (2022), who found that effective corporate governance promotes CSR initiatives. GCG fosters social obligations, motivating firms to contribute to environmental sustainability and community well-being (Tiep Le & Nguyen, 2022; Hussain et al., 2018). Shaikh et al. (2024) emphasized that GCG enhances sustainability performance through transparency, accountability, and operational efficiency. Likewise, Kurniawati et al. (2018) observed that robust governance improves SME resilience in the context of free trade.

However, some studies provide contrasting insights. Mahmood and Orazalin (2017) reported that GCG had no significant impact on CSR in the oil and mining sectors in Kazakhstan, where compliance was legally mandated rather than voluntarily driven. Similarly, Dwaikat et al. (2020) noted that GCG is only effective in firms with high sustainability awareness. Elshaer et al. (2021) emphasized that the effectiveness of GCG in enhancing sustainability performance is conditional on external factors such as regulatory frameworks and compliance with environmental standards.

According to KNKG (2016) and Parianti et al. (2023), the implementation of sound corporate governance is essential for SMEs to ensure long-term viability. Strong governance structures are critical for enabling SMEs to scale, improve operational efficiency, and prevent business failure (Saputra, 2020; Rinaldo et al., 2023; Aguilera et al., 2021). Husted and Sousa-Filho (2019) further argue that effective governance ensures stakeholder interests—including those of society and the environment—are considered in corporate decision-making, thus enhancing long-term competitiveness. This aligns with stakeholder theory (Yao et al., 2023), which supports the integration of social and environmental considerations into business governance.

From a Resource-Based View (RBV) perspective, green corporate governance is a strategic resource that can provide a competitive advantage for SMEs. A well-established GCG system enhances a firm's CSR reputation and supports its business sustainability efforts. The implementation of green policies within governance mechanisms encourages SMEs to engage in CSR initiatives such as carbon emission reductions, use of eco-friendly materials, and community involvement. In this way, CSR becomes a strategic practice, rather than a mere regulatory obligation. Within this study, green corporate governance emerged as the most influential variable affecting CSR among SMEs in Surakarta.

6.2 The Effect of Green Accounting on Corporate Social Responsibility and Sustainability Performance in Surakarta's SMEs

The study further reveals that SMEs in Surakarta are undergoing a transitional phase towards sustainable business practices, influenced by regulatory changes and rising public expectations. Green accounting practices are gradually being adopted, particularly in sectors like manufacturing and culinary businesses, including initiatives such as waste management cost tracking and energy efficiency monitoring. SMEs implementing green accounting show higher levels of CSR engagement, as evidenced by better environmental management and stronger community involvement.

These findings align with prior research by Benson et al. (2021), Salira and Fauzan (2022), and Lestari et al. (2020), which indicated a positive relationship between green accounting and CSR disclosure, as well as corporate sustainability. Green accounting promotes resource efficiency, enhances corporate image, and supports green innovation (Indriastuti & Mutamimah, 2023; Azhar Hussain & Razak Abdul Hadi, 2018; A. Jan et al., 2019; A. A. Jan et al., 2021). In the Nigerian context, Beredugo and Mefor (2012) demonstrated that environmental accounting is essential to sustainable development. Kusumawardhany (2022) emphasized that green accounting improves transparency and contributes to MSMEs' profitability and business ethics. Similarly, Rounaghi (2019) noted that green accounting increases corporate environmental awareness.

Nevertheless, other studies show mixed outcomes. Lucian (2022) reported that environmental performance and cost dimensions did not significantly affect CSR disclosures. Uzhegova et al. (2019) and Asemokha et al. (2019) observed that many SMEs still perceive environmental costs as non-essential expenditures. In Zambia, Choongo (2017) found that CSR adoption is not always linked to green accounting. These findings resonate with Yuliana & Sulistyawati (2021), Yu et al. (2021), and Kusumawardhany (2022), who emphasized SMEs' dual role as both economic drivers and environmental polluters. Therefore, adopting green accounting such as operational waste tracking and environmental cost allocation—serves as a tangible expression of environmental ethics and enhances public perception of SMEs.

Further studies (Damaianti, 2022; Tino & Sudana, 2025) underscore the necessity of institutionalizing green accounting in SMEs to mitigate environmental impact and improve sustainability performance. Green accounting is seen as a remedy for the limitations of traditional accounting, which often overlooks social and environmental aspects. It offers critical information for designing cost-reduction strategies associated with environmental impacts and promotes effective waste management. Ratulangi et al. (2018) identified green accounting as an essential tool for understanding the interface between business operations and environmental systems.

From a theoretical perspective, these findings are supported by stakeholder theory (Freeman & McVea, 2005), which asserts that businesses are accountable not only to shareholders but also to society and the environment. The Resource-Based View (Barney, 2015) further supports the notion that green accounting can be a source of sustainable competitive advantage by improving resource efficiency and enhancing a firm's social image. Consequently, the empirical evidence supports the role of green accounting as a strategic instrument for enhancing CSR and strengthening the sustainability positioning of SMEs in the green economy era.

6.3 The Impact of Government Intervention on Corporate Social Responsibility in MSMEs in Surakarta

The findings reveal that government intervention exerts a significant and positive influence on corporate social responsibility (CSR), while its effect on sustainability performance is significantly negative among micro, small, and medium-sized enterprises (MSMEs) in Surakarta. These results align with previous research by Wiredu et al. (2023), which emphasized the role of government policies in raising firms' social awareness. Similarly, studies by Sadeh et al. (2021) and Rao et al. (2023) underscore the importance of governmental regulations and subsidies in reinforcing CSR implementation. However, in contrast, Mahmood and Orazalin (2017) found that government intervention in Kazakhstan's oil and gas sector failed to promote sustainability outcomes due to weak enforcement and limited corporate compliance.

Although training programs organized by the government have improved MSMEs' awareness of sustainability issues, the actual adoption of sustainable practices remains limited, primarily due to insufficient follow-up support, such as access to green financing and eco-friendly technologies (Ernawatiningsih et al., 2023; Handayani & Hidayati, 2022). Ratulangi et al. (2018) and Tiep Le & Nguyen (2022) suggest that effective government intervention should encompass financial incentives (e.g., green subsidies, tax benefits, and low-interest green financing schemes), non-financial recognition (e.g., formal certifications, awards, and public acknowledgments), market access facilitation (e.g., green procurement preferences, export assistance), and technical support (e.g., specialized training and technology access).

Nevertheless, as highlighted by Marinova et al. (2016) and Bahta et al. (2021), the effectiveness of such interventions is often constrained by MSMEs' short-term profit orientation and prevailing market pressures. Weak regulatory enforcement such as the lack of strict sanctions in Government Regulation No. 47 tahun 2012 and Ministry of Social Affairs Regulation No. 13 tahun 2012 further renders CSR implementation voluntary. Consequently, some MSMEs may engage in CSR primarily as a marketing tool or greenwashing tactic (SGEM, 2015).

Overall, while government intervention has a statistically significant impact on CSR among MSMEs, the magnitude remains limited. Strengthening this impact requires more practical policies, stronger oversight, and tangible incentives. From the perspective of Stakeholder Theory (Freeman & McVea, 2005) and the Resource-Based View (Barney, 2015), government actors play a critical external role in shaping sustainability-driven competitive advantages for MSMEs.

6.4 The Effect of Green Organizational Culture on Corporate Social Responsibility and Sustainability Performance in MSMEs

The analysis indicates that green organizational culture (GOC) has a significant negative effect on CSR, but a positive and significant impact on sustainability performance among MSMEs in Surakarta. This paradox may be attributed to MSMEs' tendency to focus their green practices on internal efficiency and resource optimization rather than external social initiatives. In some cases, financial constraints and prioritization of operational savings limit MSMEs' ability to invest in CSR-related community programs.

These findings are consistent with González-Rodríguez et al. (2021), who observed that firms highly oriented toward environmental efficiency often reduce engagement in social activities. Zhou et al. (2023) similarly note that green-oriented MSMEs tend to allocate more resources to internal operational improvements rather than CSR initiatives. Bartolacci et al. (2020) and Shurrab et al. (2019) warn that the effectiveness of green culture depends on complementary investments in technology and employee training. Wan et al. (2020) further argue that the success of green cultural practices hinges on industry readiness and resource availability.

On the other hand, studies by Bansal et al. (2019) and Vrontis et al. (2022) report that organizations with a strong green culture often extend their sustainability efforts to social dimensions, such as community engagement. Huq et al. (2019) also highlight that GOC can promote sustainable innovation and improve operational efficiency. An illustrative example can be found in the batik and textile industry in Laweyan District, a heritage-rich area of Surakarta. Despite the potential for integrated sustainability practices, many MSMEs in the region continue to use hazardous chemicals in batik production, undermining environmental and social sustainability. This indicates a disconnect between cultural potential and CSR execution within green-oriented organizations. The negative impact of GOC on CSR reflects a gap between internal environmental orientation and external social engagement. Thus, MSMEs must balance internal sustainability with external contributions to maintain competitiveness and enhance stakeholder trust.

Within the RBV framework, GOC constitutes a rare, intangible asset that is difficult to replicate, thus serving as a source of long-term competitive advantage (Bansal et al., 2019). GOC fosters internal innovation, cross-functional collaboration, and the integration of green governance and accounting practices. By embedding environmental values into daily operations, employees gain a deeper understanding of sustainability strategies

(Das et al., 2021). Theoretically, these results challenge Stakeholder Theory, which posits that firms are accountable to a broad range of stakeholders, including society at large. While RBV recognizes GOC as a strategic resource, the study suggests that this cultural advantage has yet to be fully leveraged to enhance external CSR efforts. MSMEs are therefore encouraged to expand the scope of their sustainability initiatives from internal efficiency to inclusive external engagement.

6.5 The Effect of Corporate Social Responsibility on Sustainability Performance in MSMEs in Surakarta

The findings demonstrate a significant negative relationship between CSR and sustainability performance among MSMEs in Surakarta. This result is particularly intriguing given that the descriptive analysis revealed a high average perception of CSR importance (mean = 4.16), indicating strong awareness among business owners regarding the economic, social, and environmental dimensions of CSR. For instance, high scores were recorded on social indicators such as maternity leave provision (mean = 4.39). However, despite positive perceptions, inferential analysis suggests that CSR practices—when not strategically integrated—may lead to suboptimal sustainability outcomes. Many CSR activities appear to be compliance-driven or philanthropic in nature, rather than embedded within the firms' core sustainability strategies. This can result in financial burdens, especially when resources are allocated to social programs without parallel investments in green technologies, energy efficiency, or eco-innovation.

This finding corroborates Kraus et al. (2020), who argued that CSR in MSMEs can become a cost burden if not aligned with business sustainability goals. Similarly, Lutfi et al. (2023) found that CSR initiatives focusing solely on regulatory compliance or administrative reporting do not enhance long-term sustainability. In contrast, studies by Avilya & Ghozali (2022), Abbas & Sağsan (2019), and Tandoh et al. (2022) emphasize that strategically managed CSR can strengthen business reputation, customer loyalty, and stakeholder trust, which in turn improve sustainability performance. Pratiwi & Hidayah (2023) further note that a higher commitment to CSR correlates with improved sustainability outcomes. These contrasting results highlight the critical importance of CSR implementation design. For example, a manufacturing MSME in Surakarta that donates to social causes but neglects waste management or energy efficiency may experience limited sustainability gains. Therefore, integrating CSR into core business strategies is essential to enhance the effectiveness and long-term impact of CSR programs on sustainability performance.

6.7 Corporate Social Responsibility as a Mediating Mechanism in the Relationship Between Green Governance, Green Accounting, Government Intervention, and Green Organizational Culture on Sustainability Performance in MSMEs in Surakarta, Indonesia

The findings of hypotheses H_{10} , H_{11} , and H_{12} indicate that corporate social responsibility (CSR) significantly and negatively mediates the relationships between green corporate governance, green accounting, and government intervention on sustainability performance among micro, small, and medium-sized enterprises (MSMEs) in Surakarta. These results suggest that the implementation of green governance, green accounting, and government-led initiatives may adversely affect sustainability outcomes when mediated through CSR practices that are merely symbolic or administrative in nature. In other words, CSR activities that are focused solely on compliance with formal regulations—without embedding them strategically within organizational culture—can generate counterproductive outcomes for sustainability performance.

This implies that even well-structured environmental governance within MSMEs may fail to yield sustainability benefits when CSR is reduced to a checklist of regulatory obligations. The study supports previous findings by Xiaodong Wang and Bian (2022), who argue that although green governance can enhance CSR engagement, its actual contribution to sustainability depends heavily on how CSR is operationalized within firms. Similarly, green accounting should not be confined to environmental cost reporting or administrative compliance. Its strategic value lies in fostering real behavioral and operational changes that advance sustainability. Consistent with Ray et al. (2024), the study reveals that while many MSME owners recognize the importance of distinguishing environmental from personal costs, technical knowledge and variations in understanding hinder the effective implementation of green accounting practices. Indah Kusumawardhany (2022) highlights that these challenges often stem from a lack of training and the diverse socio-economic conditions among MSMEs.

Contrastingly, other scholars such as Y. Zhang and Berhe (2022), L. Wang et al. (2023), and Moorthy and Yacob (2013) emphasize that when effectively applied, green accounting enhances sustainability by enabling CSR to serve as a strategic mediator. It provides a coherent framework that aligns environmental and financial goals, facilitates sustainable decision-making, and supports long-term investment in environmentally responsible initiatives.

Government intervention, when implemented as compulsory CSR obligations without accompanying support in the form of training, incentives, or technical assistance, tends to be ceremonial rather than transformative. As such, it not only fails to enhance sustainability performance but may also place undue burdens on MSMEs. This study thus highlights a novel finding: CSR mediates the negative relationship between government intervention and sustainability performance among MSMEs in Surakarta, reinforcing the need for contextualized and participatory policy frameworks that enable CSR to function as a genuine driver of sustainable development. In Indonesia, CSR is not only a moral imperative but also a legal obligation, particularly for businesses operating in sectors related to natural resource exploitation, as mandated by Law No. 40 tahun 2007 on Limited Liability Companies and reinforced by Law No. 47 tahun 2012. Environmental responsibilities are also legislated under Law No. 23 tahun 1997 and Law No. 32 tahun 2009, which require businesses to consider environmental and social impacts as part of their licensing and operational processes.

Nevertheless, many Indonesian MSMEs do not perceive CSR as their responsibility, assuming it applies solely to incorporated legal entities. According to Kusumawardhany (2022), this perception is reinforced by the belief that CSR requires significant financial outlays. Meanwhile, regulations governing CSR among MSMEs remain ambiguous and non-binding, despite the fact that their production activities can have considerable environmental impacts. Therefore, CSR should be embedded as a core element of MSME operations, regardless of size or formal legal structure. In summary, the effectiveness of CSR as a mediating mechanism between green governance and sustainability performance depends heavily on its strategic internalization and implementation within MSMEs. Without strong integration of environmental regulation, innovative CSR practices, and transparent environmental accounting, the potential of green governance to support business sustainability remains underutilized.

6.8 Corporate Social Responsibility as a Mediator Between Green Organizational Culture and Sustainability Performance in MSMEs in Surakarta

Hypothesis H₁₃ is supported, confirming that green organizational culture positively influences sustainability performance through the mediating role of CSR. MSMEs that cultivate environmentally friendly values and internal practices tend to implement more effective CSR programs, leading to improved sustainability outcomes. A strong green culture enhances organizational awareness of social and ecological responsibilities, which are translated into CSR initiatives that directly support sustainability goals. This finding is consistent with G. Zhou et al. (2021), who assert that MSMEs with a well-established green culture are more likely to adopt sustainability-oriented CSR. In this context, CSR functions as an implementation mechanism, translating cultural values into actionable business strategies. However, this contrasts with Sharma et al. (2024), who argue that CSR is not always the primary channel for achieving sustainability and may be more effective when directly embedded into core business strategies.

Green organizational culture refers to a set of values, beliefs, and practices that prioritize environmental preservation. It includes internal policies, employee awareness of environmental issues, and a commitment to implementing green practices (Gholami et al., 2022). CSR based on green culture is often more impactful than CSR driven merely by compliance with regulations or accounting principles. Therefore, MSMEs should integrate CSR into their core values, not just treat it as an administrative obligation. Policymakers must also develop more flexible CSR frameworks that do not overburden MSMEs but enable them to align CSR with their sustainability goals. Theoretically, this finding aligns with the Resource-Based View (RBV) (Barney, 2015), which positions green organizational culture as a strategic resource capable of fostering competitive advantage. However, for this culture to translate into tangible sustainability gains, CSR must act as an implementation vehicle that realizes green principles in practice. This also supports Stakeholder Theory (Freeman, 1984; Freeman & McVea, 2005), which emphasizes the need for firms to address the expectations of various stakeholders, including governments, communities, and customers. CSR in this case bridges the gap between green organizational culture and stakeholder-driven sustainability performance. Practically, the study implies that MSMEs in Surakarta must strengthen their internal green cultures and connect them to tangible CSR programs—not merely as compliance measures, but as integral components of long-term sustainability strategies.

6.9 Top Management Commitment as a Moderator Between Corporate Social Responsibility and Sustainability Performance in MSMEs in Surakarta

The analysis reveals that top management commitment significantly moderates the indirect effect of CSR on sustainability performance. This suggests that active involvement from senior leadership can enhance the positive impact of CSR on sustainability outcomes, even though the quantitative effect remains modest. The

success of CSR in advancing sustainability is thus largely dependent on the extent to which top management integrates social and environmental values into the firm's core strategic decisions. When CSR is treated only as a regulatory obligation, its impact on sustainability tends to be minimal. However, with strong support and direct involvement from top management, CSR initiatives are more likely to deliver meaningful contributions to sustainability performance. This finding is in line with research by Shen et al. (2016) and L. Wang et al. (2023), who show that firms with committed leadership are more successful in leveraging CSR as a sustainability strategy.

Supporting this, Andries & Stephan (2019), Vrontis et al. (2022), and Chatterjee et al. (2022) argue that strong leadership can transform CSR from a compliance function into a source of competitive advantage. In contrast, Branicki et al. (2023) highlight that top management commitment is only effective when CSR is embedded directly into operational strategies, rather than remaining at the policy level. Case studies from MSMEs in Surakarta's food sector illustrate that top managers who champion CSR through green product innovations tend to achieve better sustainability outcomes. Conversely, firms that implement CSR merely to meet regulatory requirements often fail to realize its potential benefits. In practice, top management commitment serves as a corrective force against the limitations of regulation-oriented CSR. Nevertheless, its influence is still constrained unless further institutionalized. To strengthen this role, leadership must ensure that CSR initiatives contribute not only to social value but also to resource efficiency and green innovation.

These findings offer several significant theoretical and practical implications. Theoretically, the study reinforces the importance of integrating multiple organizational and institutional factors—such as green corporate governance, green accounting, government intervention, and green organizational culture—through corporate social responsibility (CSR) as a mediating mechanism to achieve sustainability performance. The negative mediating effect of CSR in certain relationships suggests that CSR, when implemented in a symbolic or compliance-oriented manner, may not only be ineffective but may even hinder sustainability performance in MSMEs. This challenges traditional assumptions that CSR is inherently beneficial, and instead highlights the need for contextual, culturally embedded, and leadership-driven CSR strategies.

Furthermore, this study adds to the growing body of literature on the role of top management commitment as a moderating variable. When top leadership demonstrates genuine commitment to sustainability, CSR efforts are more likely to be internalized across organizational levels, thereby enhancing their effectiveness. This supports the dynamic capability perspective, in which managerial values and strategic leadership serve as key enablers of sustainable transformation (Teece, 2014; Vrontis et al., 2022). Practically, the findings underline the urgency for policy reform in the regulation of CSR in Indonesia, particularly for MSMEs. Rather than mandating CSR as a one-size-fits-all legal obligation, government agencies should focus on capacity-building programs that help MSMEs develop context-specific CSR initiatives aligned with their business models and stakeholder environments. Financial incentives, technical assistance, and training on green accounting and sustainability reporting would significantly empower MSMEs to engage in meaningful CSR practices.

Moreover, MSME managers should move beyond perceiving CSR as a financial burden or mere compliance cost. Instead, it should be strategically aligned with green organizational culture and supported by strong top management commitment. Embedding CSR into the organizational identity and strategic goals enables firms to build long-term resilience, reputational capital, and competitive differentiation in the era of green economy and climate crisis. The complex interplay between green organizational elements and CSR also supports the argument that sustainability is a system-level outcome that requires coherence across governance, culture, leadership, and stakeholder engagement. These components must be harmonized to generate a cumulative effect on sustainability performance rather than functioning in silos or as fragmented initiatives.

7. Conclusion

This study examined the mediating role of corporate social responsibility (CSR) and the moderating role of top management commitment in the relationships between green corporate governance, green accounting, government intervention, green organizational culture, and sustainability performance among MSMEs in Surakarta, Indonesia. The results reveal that:

1. CSR acts as a negative mediator in the relationship between green governance, green accounting, and government intervention and sustainability performance, particularly when CSR is implemented in a regulatory or symbolic manner.
2. CSR positively mediates the relationship between green organizational culture and sustainability performance, highlighting the importance of internal value systems in driving meaningful CSR and sustainable outcomes.
3. Top management commitment significantly moderates the CSR–sustainability performance link, indicating that leadership involvement enhances the strategic impact of CSR.

These findings contribute to a more nuanced understanding of how CSR functions within different organizational contexts and how it can be either a driver or inhibitor of sustainability depending on how it is integrated and supported. They also underscore the role of leadership and organizational culture in transforming CSR from a formal obligation into a transformative sustainability strategy.

8. Implications and Future Research

8.1 Policy Implications

The Indonesian government, particularly at the local level, should re-evaluate CSR-related regulations to better accommodate the unique capacities and constraints of MSMEs. Enabling mechanisms such as sustainability education, subsidized environmental audits, and simplified reporting tools can foster greater participation and effectiveness of CSR practices.

8.2 Managerial Implications

MSME leaders should institutionalize CSR not as a peripheral function, but as a core component of strategic management. This requires training in sustainability management, stakeholder dialogue, and the integration of green values across departments. Leadership training that emphasizes environmental ethics and strategic vision for sustainability should be prioritized.

8.3 Research Implications:

Future studies could explore sectoral differences in the CSR–sustainability performance relationship, or employ longitudinal methods to assess the dynamic evolution of green practices in MSMEs. Mixed-method approaches could also provide deeper insights into the social and cultural dimensions influencing CSR effectiveness, particularly in informal or semi-formal MSME sectors.

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