

# Driving Sustainable Environmental Performance In Smes: The Interplay Of Ethical Leadership, Circular Economy, And Environmental Management Control

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## ABSTRACT

The study aims to examine the direct effects of ethical leadership and the circular economy on environmental performance. Furthermore, it provides empirical evidence on the mediating role of the Environmental Management Control System (EMCS) in the relationship between ethical leadership, the circular economy, and environmental performance. A quantitative approach, utilizing a survey method, was employed. The respondents were micro, small, and medium enterprises (MSMEs) located in Semarang Regency, registered under the MSME Centre, and selected based on their implementation of circular economy practices and EMCS. A total of 203 valid responses were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that the circular economy has a direct positive effect on environmental performance. However, ethical leadership does not have a direct and significant effect on environmental performance. Moreover, EMCS serves as a mediating variable in the relationship between ethical leadership and the circular economy, as well as their impact on environmental performance. The findings offer practical implications for MSME owners and policymakers to strengthen EMCS as a strategic tool to support the implementation of a circular economy, aimed at enhancing environmental performance. Additionally, MSME leaders seeking to apply ethical leadership principles must establish an adequate environmental control system as a key driver in achieving improved environmental outcomes. This study is limited by its reliance on self-reported data, which may introduce potential bias. Furthermore, it lacks a comprehensive exploration of external factors such as government regulations and market dynamics. This study is distinctive in its exploration of the mediating role of EMCS in the relationship between ethical leadership, the circular economy, and environmental performance, grounded in the Resource-Based View (RBV) theory. It also contributes to filling a gap in the literature by providing novel insights into the implementation of circular economy and ethical leadership practices among MSMEs in developing countries.

**Keywords:** Management Control Systems, Ethical Leadership, Circular Economy, Environmental Performance.

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## 1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play a vital role in global economic development by contributing significantly to employment and business activities (Dey et al., 2020; Ferasso et al., 2020; Geissdoerfer et al., 2017). In Indonesia, MSMEs contribute approximately 61% to the country's gross domestic product (GDP), absorb about 99% of domestic employment, and represent the majority of business entities (Maksum et al., 2020). However, despite their economic contributions, MSMEs are also major contributors to environmental degradation. Collectively, MSMEs are responsible for around 50–60% of global pollution. For example, they account for 64% of air pollution in Europe, while only 0.4% of MSMEs have implemented environmental management systems (Dey et al., 2020).

In developing countries, including Indonesia, MSMEs contribute up to 70% of total industrial pollution (OECD, 2023), primarily due to inefficient resource use and poor waste management. Data from the Indonesian Ministry of Environment and Forestry (KLHK, 2023) indicate that MSMEs generate approximately 20% of domestic waste. Furthermore, only 15% of Southeast Asian MSMEs have adopted green technologies or participated in sustainability initiatives (ADB, 2022). This highlights a significant gap between environmental sustainability imperatives and current MSME business practices, which are often characterized by natural resource exploitation and high waste generation (Doh et al., 2019; Renwick et al., 2013).

In response to global sustainability challenges, Indonesia has begun to integrate circular economy principles into its national vision and development strategies. The "Indonesia Vision 2045" outlines the circular economy as a key component of future policy, projecting benefits such as a 2.3%–2.5% increase in GDP by 2030, 126 million tons of CO<sub>2</sub> emissions reduction, 4.4 million new jobs, and significant household expenditure savings (Nugroho, 2015; Tambunan, 2019).

The Resource-Based View (RBV) theory posits that internal organizational resources, such as leadership and

management control systems, can serve as strategic assets for achieving sustainable competitive advantage (Barney, 1991). This is particularly relevant in addressing the sustainability challenges faced by MSMEs, as the adoption of circular economy practices requires not only external policy support but also internal organizational readiness, including leadership commitment and effective control mechanisms. However, MSMEs in Indonesia face several constraints in implementing sustainability initiatives. These include limited financial and technological resources, low awareness of environmental issues, and insufficient government support. This creates a gap between the potential of the circular economy to enhance environmental performance and the reality of its implementation at the MSME level.

This study seeks to address this gap by exploring the relationships between ethical leadership, circular economy practices, environmental management control systems (EMCS), and environmental performance in Indonesian MSMEs. It contributes to the academic literature by investigating the mediating role of EMCS, which remains underexplored in the MSME context, particularly in developing countries. Previous research has primarily focused on large corporations or multinational enterprises, with limited attention to how circular economy principles are operationalized in MSMEs.

Leadership plays a crucial role in driving organizational change amid rapid business transformation. In the MSME context, leadership is often embodied in the personal values and ethical conduct of business owners or managers. Ethical leadership, which emphasizes integrity, fairness, and social responsibility, aligns closely with the principles of sustainability and circular economy (Centobelli et al., 2021; Sharma et al., 2021). However, its role in facilitating sustainability practices remains insufficiently examined (Lu & Lin, 2014; Newman et al., 2014; Saha et al., 2020). In addition, management control systems are recognized in the literature as essential mechanisms for translating strategic intent into operational actions (Cheffi et al., 2023; Efferin & Hartono, 2015), especially in the context of major shifts such as sustainability transitions. From a theoretical perspective, this study makes four contributions. First, it integrates the Resource-Based View and Upper Echelon Theory to propose and empirically validate a comprehensive model linking ethical leadership, circular economy practices, EMCS, and environmental performance. Second, by focusing on the individual level of analysis, it contributes to the emerging literature on the micro-foundations of sustainability, emphasizing how individual actions and values drive broader organizational outcomes. Third, it extends the limited body of knowledge on ethical leadership in the context of circular economy adoption, particularly in Indonesia, where leaders are often expected to uphold strong moral standards. Fourth, it offers empirical evidence on the pivotal role of EMCS in enhancing circular economy implementation within MSMEs.

From a managerial perspective, this study highlights the importance of leveraging the ethical attributes of MSME leaders to foster sustainability. It also underscores the strategic role of EMCS in enabling the translation of ethical leadership into effective environmental practices (Díaz-López et al., 2021; Giannetti et al., 2023). These findings provide practical insights for policymakers and practitioners to evaluate and support the implementation of circular economy initiatives at the operational level in MSMEs.

## 2. LITERATURE REVIEW

### 2.1 Resource-Based View (RBV) Theory

The Resource-Based View (RBV) posits that an organization's internal resources—particularly those that are valuable, rare, inimitable, and non-substitutable—are key sources of sustained competitive advantage (Barney, 1991). In the context of environmental performance, RBV provides a theoretical foundation for understanding how unique internal capabilities, such as ethical leadership and Environmental Management Control Systems (EMCS), can enhance sustainability outcomes.

Ethical leadership and EMCS represent intangible strategic assets that can support the integration of environmental strategies, such as circular economy principles, within organizational operations. EMCS facilitates the integration of environmental and financial information to guide resource allocation and strategic decision-making (Naranjo-Gil et al., 2016), while ethical leadership shapes the organizational culture and behaviors aligned with sustainability. Together, these resources contribute to improved environmental performance by promoting accountability, transparency, and long-term orientation in environmental management.

### 2.2 Environmental Performance in Indonesian MSMEs

Environmental and social engagement among MSMEs in Indonesia is strongly influenced by deeply rooted cultural and religious values. These local norms often guide business owners' behavior and underpin environmental consciousness. However, regulatory influence is relatively limited, as government policies

tend to target larger enterprises, leaving MSMEs with minimal formal guidance or enforcement regarding sustainability practices.

Cognitive factors, such as the educational background of MSME owners, play a significant role in shaping environmental awareness. Famiola & Wulansari (2020) shows that entrepreneurs with higher education levels are more likely to integrate environmental concerns into their business models, thus aligning with global sustainability trends. This highlights the potential of human capital in enhancing environmental responsiveness at the microenterprise level.

A joint study by the Indonesian Ministry of Cooperatives and SMEs and the United Nations Development Programme (UNDP, 2021) found that 95% of over 3,000 surveyed MSMEs expressed interest in and support for environmentally friendly business practices (Junida, 2022). However, limited access to financial and technical resources remains a significant barrier to the adoption of green technologies. In response, the Indonesian government has introduced programs such as UMKM Level Up, which provides training, mentoring, and access to appropriate technologies to improve operational efficiency and sustainability. This initiative highlights the crucial role of public-private collaboration in creating an enabling environment for MSMEs to achieve both social and environmental objectives (Prodjo, 2024).

### **2.3 Hypothesis Development**

#### **2.3.1 Ethical Leadership and Environmental Performance**

Ethical leaders tend to prioritize policies that promote environmental sustainability, set environmentally friendly goals, and allocate resources to support sustainability initiatives (Hameed et al., 2023). Through such practices, they not only integrate sustainability into business strategy but also encourage the organization to meet stakeholders' expectations for environmental responsibility. Consequently, ethical leadership can play a key role in enhancing environmental performance.

**H<sub>1</sub>:** Ethical leadership has a positive effect on environmental performance.

#### **2.3.2 Circular Economy and Environmental Performance**

The adoption of circular economy principles enables organizations to significantly reduce their environmental impact by embedding resource efficiency into production processes. It helps lower carbon emissions, reduce waste, and minimize the use of natural resources, thus improving environmental performance. Prior studies by Marrucci et al. (2021), Scarpellini et al. (2020), and Khan et al. (2020) have demonstrated that circular economy practices directly enhance environmental outcomes by promoting eco-innovation and sustainable product development.

**H<sub>2</sub>:** Circular economy practices have a positive effect on environmental performance.

#### **2.3.3 Environmental Management Control Systems (EMCS) and Environmental Performance**

Environmental management control systems consist of both formal and informal elements that work synergistically to foster improved environmental performance. Formal controls—such as environmental policies, procedures, and reporting systems—provide a structured framework for regulatory compliance and environmental goal-setting. Informal controls—such as organizational culture, employee engagement, and internal communication—encourage proactive behavior in managing environmental issues (Pondeville et al., 2013). The integration of both elements enhances resource efficiency, reduces emissions, and supports operational sustainability.

**H<sub>3</sub>:** Environmental management control systems (formal and informal) positively affect environmental performance.

#### **2.3.4 Circular Economy and EMCS**

Organizations that implement circular economy strategies—including waste reduction, resource optimization, and material reuse—require a robust environmental management control system to support these activities. Pondeville et al. (2013) argue that proactive environmental firms are more likely to develop advanced EMCS. By adopting circular practices, organizations are driven to gather, analyze, and report environmental data to ensure process efficiency and regulatory compliance. Therefore, circular economy adoption often leads to the development of comprehensive EMCS to support strategic decision-making.

**H<sub>4</sub>:** Circular economy practices have a positive effect on EMCS.

#### **2.3.5 Ethical Leadership and EMCS**

Ethical leaders utilize management control systems to communicate moral values, ensure accountability, and align organizational performance with strategic sustainability goals (Cheffi et al., 2023). In this context, ethical leadership plays a vital role in designing and implementing EMCS. Ethical leaders motivate employees, foster a sustainability-oriented organizational culture (informal controls), and institutionalize environmental performance indicators (formal controls) that reflect broader social and environmental commitments.

**H<sub>5</sub>:** Ethical leadership has a positive effect on EMCS.

### **2.3.6 The Mediating Role of EMCS between Ethical Leadership and Environmental Performance**

According to Resource-Based View (RBV) theory, ethical leadership is a strategic resource that can enhance competitive advantage when complemented by effective control systems. Ethical leaders shape behaviors and organizational culture, using EMCS to embed sustainability values into operational practices. Through both formal and informal mechanisms, EMCS supports environmental goal setting, performance monitoring, risk management, and accountability. As such, EMCS serves as a conduit through which ethical leadership enhances environmental performance.

**H<sub>6</sub>:** EMCS mediates the relationship between ethical leadership and environmental performance.

### **2.3.7 The Mediating Role of EMCS between Circular Economy and Environmental Performance**

Circular economy implementation requires integrated systems for monitoring, measuring, and managing sustainability activities. EMCS can serve as a performance evaluation tool, an information management system, and a reporting mechanism for circular economy-related initiatives. A well-developed EMCS enhances the environmental benefits of circular economy by providing structure, metrics, and feedback. In line with the triple bottom line framework, EMCS allows organizations to balance economic, social, and environmental dimensions—the core objectives of circular economy strategies.

**H<sub>7</sub>:** EMCS mediates the relationship between circular economy practices and environmental performance.

## **3. METHODOLOGY**

### **3.1 Research Method**

This study addresses the call from scholars to further investigate MSMEs that implement circular economy practices. By focusing on MSMEs in Indonesia, this research expands the scope of existing studies on management control systems (MCS) and circular economy to new micro and macro contextual settings. The Indonesian context presents a compelling case, as its MCS and circular economy initiatives are shaped by unique coercive and normative pressures, alongside a rich diversity of cultural and organizational backgrounds (Geng et al., 2012).

The unit of analysis in this study consists of MSMEs affiliated with the UMKM Centre in Semarang Regency, comprising 450 members. A non-probability purposive sampling technique was applied, selecting only those MSMEs that implement both circular economy practices and Environmental Management Control Systems (EMCS); those not meeting these criteria were excluded from the sample. This approach aligns with previous studies on circular economy and MCS in emerging economies, offering a comprehensive overview of these practices in non-traditional settings.

Due to the novelty of the research topic and the need to gain in-depth insights, purposive sampling was deemed appropriate. Data were collected through online and/or paper-based questionnaires distributed between May and June 2023. A total of 203 valid responses met the selection criteria and were used for analysis.

The targeted respondents were owners or general managers, consistent with the study's emphasis on ethical leadership. These individuals possessed adequate knowledge of their organization's circular economy practices and management control systems. To increase response rates, the research team employed both online submissions and on-site distribution. Respondents were informed that the researchers could wait a few hours for completion or return at an agreed time. This proactive approach contributed to a higher response rate. The questionnaire included an introductory section, offering respondents the option to request a summary of the study findings.

Data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS), which is suitable for assessing the mediating role of EMCS in the relationship between ethical leadership, circular economy, and environmental performance.

### **3.2 Measurement**

Data for this study were collected using a structured questionnaire comprising five-point Likert scales. All measurement instruments were adapted from established literature to ensure contextual relevance and construct validity.

**Ethical Leadership** is defined as leadership behavior that reflects human-oriented values, integrity, fairness, and responsibility, guiding leaders to prioritize sustainability and environmentally responsible business practices. This construct was measured using items adapted from Brown et al. (2005) and Cheffi et al. (2023), covering dimensions such as fairness, integrity, and ethical decision-making.

**Circular Economy** in this study refers to an economic model aimed at minimizing waste and maximizing

resource utilization through recycling, repairing, and reusing products and materials. Items measuring circular economy practices were adopted from Potting et al. (2017) and Cheffi et al. (2023), assessing the extent to which firms implement recycling, refurbishment, and reuse strategies.

**Environmental Management Control Systems (EMCS)** are defined as formal and informal mechanisms used by organizational leaders to shape activities related to environmental performance. EMCS was measured using items adapted from Pondeville et al. (2013), which emphasize both formal and informal control elements.

**Environmental Performance** is conceptualized as an organization's ability to meet societal expectations regarding environmental issues, including the evaluation and management of environmental impacts. This construct was measured using items adapted from Delmas et al. (2013) and Hameed et al. (2023), focusing on resource efficiency, emission reduction, and waste management.

### 3.3 Respondents' Demographic Profile

The demographic characteristics of the respondents are presented in Table 1 below:

**Table 1. Respondent Demographics**

Variable	Category	Frequency	Percentage (%)
Total Respondents		203	100%
Gender	Male	61	30,05%
	Female	142	69,95%
Age (Years Old)	30 or below	24	11,82%
	> 30 and ≤ 40	61	30,05%
	> 41 and ≤ 50	77	37,93%
	> 51 and ≤ 60	32	15,76%
	61 or above	9	4,43%
Education	Junior High School	42	20,69%
	Senior High School	111	54,68%
	Diploma	18	8,87%
	Undergraduate	28	13,79%
	Postgraduate	4	1,97%

### 3.4 Respondent Demographics

The demographic data reveal that the majority of MSME owners are women, accounting for 69.95% of the respondents. In terms of age, the largest age group is between 41 and 50 years old (37.93%), followed by the 31–40 age group (30.5%). The smallest proportion belongs to those over the age of 61, at 4.43%. Regarding educational background, the majority of respondents have completed senior high school (54.68%), while only 1.97% hold postgraduate degrees. These findings suggest that the respondents are predominantly women in their productive age (31–50 years), with a senior high school educational background.

### 3.5 Measurement Model Evaluation

The measurement model for reflective indicators in this study was assessed through convergent validity, discriminant validity, composite reliability, and Cronbach's alpha for each construct block, as recommended by (Ghozali, 2014).

### 3.6 Convergent Validity

Convergent validity was examined by evaluating the factor loadings of each item on its respective latent construct. According to the commonly accepted rule of thumb, factor loadings should exceed 0.70 for confirmatory studies and fall between 0.60–0.70 for exploratory studies. Additionally, the Average Variance Extracted (AVE) for each construct should be greater than 0.50 (Chin, 1998).

### 3.7 Reliability

Reliability was assessed using both Cronbach's alpha and composite reliability values. In line with standard thresholds, both reliability coefficients should exceed 0.70 to indicate acceptable internal consistency of the constructs (Ghozali, 2014).

**Table 2. Loadings and Cross-Loading**

	EMCS	Circular Economy	Environmental Performance	Ethical Leadership
EL10	0,430	0,429	0,350	0,837

EL3	0,341	0,352	0,244	0,745
EL4	0,377	0,372	0,335	0,743
EL5	0,385	0,379	0,280	0,820
EL6	0,383	0,339	0,338	0,762
EL7	0,386	0,336	0,323	0,760
EL8	0,510	0,473	0,482	0,821
EL9	0,502	0,451	0,403	0,753
EP1	0,618	0,460	0,856	0,313
EP2	0,637	0,519	0,855	0,369
EP3	0,665	0,502	0,876	0,427
EP4	0,680	0,542	0,814	0,440
EP5	0,627	0,547	0,847	0,371
MCSE10	0,756	0,497	0,515	0,422
MCSE13	0,790	0,562	0,664	0,451
MCSE14	0,771	0,496	0,579	0,475
MCSE2	0,702	0,526	0,560	0,423
MCSE3	0,748	0,624	0,552	0,404
MCSE4	0,797	0,522	0,554	0,495
MCSE5	0,784	0,508	0,565	0,387
MCSE6	0,740	0,462	0,579	0,279
MCSE7	0,772	0,514	0,582	0,328
MCSE8	0,784	0,598	0,685	0,402
MCSE9	0,805	0,591	0,574	0,493
SE1	0,626	0,808	0,516	0,428
SE2	0,618	0,850	0,553	0,426
SE3	0,463	0,766	0,441	0,335
SE4	0,462	0,706	0,363	0,405

### 3.8 Convergent and Discriminant Validity

Based on Table 2, the cross-loading values for each indicator are lower on other constructs compared to their respective intended constructs. This indicates that the items specifically and accurately measure their designated latent constructs, supporting discriminant validity. Furthermore, the factor loadings for all indicators exceed 0.70, suggesting that the items are valid measures of their respective constructs.

**Table 3. Reliability and Validity of The Construct**

Construct	Indicators	Loading	Cronbach Alpha	Composite Reliability	AVE
Environmental Performance	EP1	0,856	0,904	0,929	0,722
	EP2	0,855			
	EP3	0,876			
	EP4	0,814			
	EP5	0,847			
Ethical Leadership	EL10	0,837	0,909	0,926	0,610
	EL3	0,745			
	EL4	0,743			
	EL5	0,820			
	EL6	0,762			
	EL7	0,760			
	EL8	0,821			

	EL9	0,753			
Circular Economy	SE1	0,808	0,793	0,864	0,615
	SE2	0,850			
	SE3	0,766			
	SE4	0,706			
Environmental Management Control System	MCSE10	0,756	0,931	0,941	0,591
	MCSE13	0,790			
	MCSE14	0,771			
	MCSE2	0,702			
	MCSE3	0,748			
	MCSE4	0,797			
	MCSE5	0,784			
	MCSE6	0,740			
	MCSE7	0,772			
	MCSE8	0,784			
MCSE9	0,805				

**3.9 Reliability and Convergent Validity**

Based on Table 3, all constructs demonstrate high reliability, as evidenced by Cronbach’s Alpha and Composite Reliability (CR) values exceeding the threshold of 0.70. The construct Environmental Performance exhibits the highest reliability, with a Cronbach’s Alpha of 0.904, a CR of 0.929, and an AVE of 0.722, indicating strong convergent validity. Similarly, Ethical Leadership also shows high reliability with a Cronbach’s Alpha of 0.909 and a CR of 0.926. Although its AVE is slightly lower at 0.610, it still meets the minimum requirement of 0.50 for convergent validity. The constructs Circular Economy and Environmental Management Control System (EMCS) also demonstrate adequate reliability, with Cronbach’s Alpha values of 0.793 and 0.931, CR values of 0.864 and 0.941, and AVE values of 0.615 and 0.591, respectively. These results confirm that the measurement model is both reliable and valid.

**3.10 Discriminant Validity**

Discriminant validity assesses whether items that are intended to measure different constructs are empirically distinct. A commonly used criterion is that the square root of the Average Variance Extracted (AVE) for each construct should be greater than the correlations between that construct and any other construct in the model, as proposed by Fornell & Larcker (1981).

**Table 4. Discriminant Validity – Fornell and Larcker Criterion**

	1	2	3	4
EMCS	0,769			
Circular Economy	0,701	0,784		
Environmental Performance	0,761	0,606	0,850	
Ethical Leadership	0,541	0,509	0,454	0,781

As shown in Table 4, the square root of the AVE for each construct is greater than the inter-construct correlations. This indicates that each construct shares more variance with its associated indicators than with other constructs in the model, thereby confirming that discriminant validity is achieved. Overall, the measurement model satisfies the criteria for both convergent and discriminant validity.

**3.11 Structural Model Evaluation**

To evaluate the structural model using PLS, the analysis begins by examining the R-square values (R<sup>2</sup>) of each endogenous latent variable, which indicate the model's predictive power. The R<sup>2</sup> values represent the proportion of variance in the endogenous constructs explained by the exogenous constructs. According to Hair et al. (2019), R<sup>2</sup> values of 0.75, 0.50, and 0.25 can be interpreted as substantial, moderate, and weak, respectively. These values help determine whether the influence of the exogenous latent variables on the endogenous latent variables is substantively meaningful.

**Table 5. R-Square**

	R Square	R Square Adjusted
EMCS	0,537	0,533
Environmental Performance	0,591	0,584

The results of the structural model evaluation indicate that the R-square ( $R^2$ ) value for the latent variable Environmental Management Control System (EMCS) is 0.537, while the  $R^2$  value for Environmental Performance is 0.591. According to Hair et al. (2010),  $R^2$  values above 0.50 are considered moderate, suggesting that the model demonstrates a moderate level of predictive accuracy. These results indicate that the exogenous latent variables exert a meaningful influence on the endogenous constructs. However, the moderate values also imply that other factors outside the current model may contribute to explaining the variance in EMCS and Environmental Performance, suggesting opportunities for future model refinement or the inclusion of additional variables.

#### 4. HYPOTHESIS TESTING

**Table 6. Direct Hypothesis Testing**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
Ethical Leadership -> Environmental Performance	0,035	0,031	0,052	0,678	0,498
Circular Economy -> environmental performance	0,133	0,138	0,065	2,046	0,041
EMCS -> Environmental Performance	0,649	0,651	0,065	10,008	0,000
Ethical Leadership -> EMCS	0,249	0,247	0,062	3,991	0,000
Circular Economy -> EMCS	0,574	0,577	0,058	9,843	0,000

The results of the direct hypotheses testing, as presented in Table 6, reveal that Ethical Leadership does not have a significant direct effect on Environmental Performance, thus Hypothesis 1 is not supported ( $\beta = 0.035$ ;  $p = 0.498$ ). This indicates that ethical leadership does not directly influence environmental performance within the observed context. In contrast, Hypothesis 2 is supported, suggesting that the Circular Economy exerts a significant positive influence on Environmental Performance ( $\beta = 0.133$ ;  $p = 0.041$ ). Hypothesis 3, which posits that Environmental Management Control System (EMCS) has a significant positive direct effect on Environmental Performance, is also supported ( $\beta = 0.649$ ;  $p < 0.001$ ), indicating a strong relationship between environmental management systems and environmental outcomes. Moreover, Hypothesis 4, proposing a positive effect of Ethical Leadership on EMCS, is supported with a path coefficient of  $\beta = 0.249$  ( $p < 0.001$ ), showing that ethical leadership contributes positively to the implementation of environmental management controls. Similarly, Hypothesis 5, which states that the Circular Economy positively influences EMCS, is supported ( $\beta = 0.574$ ;  $p < 0.001$ ), reinforcing the role of circular economy practices in enhancing environmental control mechanisms.

**Table 7. Indirect Hypothesis Testing**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
Ethical Leadership -> EMCS -> Environmental Performance	0,161	0,160	0,043	3,742	0,000
Circular Economy -> EMCS -> Environmental Performance	0,373	0,376	0,055	6,798	0,000

#### 5. DISCUSSION

The results of the indirect hypothesis testing reveal that the Environmental Management Control System (EMCS) significantly mediates the effect of Ethical Leadership on Environmental Performance ( $\beta = 0.161$ ;  $p < 0.001$ ). Therefore, Hypothesis 6 is supported, indicating that ethical leadership improves environmental

performance through a well-structured EMCS. Similarly, Hypothesis 7, which posits the mediating role of EMCS in the relationship between Circular Economy and Environmental Performance, is also supported ( $\beta = 0.373$ ;  $p < 0.001$ ). These findings confirm that EMCS serves as a key mechanism through which circular economy practices translate into enhanced environmental outcomes.

Empirical evidence demonstrates that Ethical Leadership does not directly impact Environmental Performance but exerts its influence through EMCS. This suggests that ethical values and leadership principles must be operationalized through a structured management control system to yield tangible environmental impacts. This finding aligns with Cheffi et al. (2023), who emphasize the role of leadership in translating ethical principles into actionable and strategic implementations. Although Ethical Leadership is widely acknowledged as a critical driver of sustainability strategies (Amisano, 2017; Lawton & Páez, 2015; Pasricha et al., 2018; Saha et al., 2020), the absence of a significant direct effect in this study may imply the necessity of a mediating mechanism—such as EMCS—to convert ethical intentions into measurable outcomes. This reinforces prior evidence that ethical leadership is more effective when integrated through formal control mechanisms (De Roeck & Farooq, 2018; Pasricha et al., 2018).

The finding that Circular Economy positively influences Environmental Performance (H2) is also confirmed. Drawing upon the Resource-Based View (RBV), circular economy practices represent a form of dynamic capability, allowing organizations to optimize resource utilization through the principles of reduce, reuse, and recycle. Circular economy provides significant environmental benefits during the design and production phases; however, downstream activities such as recycling and consumption often receive less attention (Bocken et al., 2016; Frick & Hedenmark, 2016). In the context of developing countries, the implementation of circular economy in MSMEs remains in its early stages compared to more advanced economies. Therefore, it is essential for policymakers to facilitate circular economy adoption through enabling policies, public-private collaborations, and the strategic framing of circular economy as a sustainability driver for MSMEs.

Additionally, the study confirms the direct impact of EMCS on Environmental Performance. This finding highlights the pivotal role of EMCS in providing relevant data and information to routinely evaluate and monitor environmental outcomes. EMCS acts as a comprehensive tool for systematically managing and improving environmental performance. It also serves as a critical bridge between sustainability strategy and managerial action. As a formal system, EMCS supports data-driven decision-making and ensures that environmental strategies are embedded within daily operational processes (Naranjo-Gil et al., 2016). Through EMCS integration, MSMEs can develop environmentally sustainable practices by modifying internal processes or adopting circular business models (Ferasso et al., 2020; Svensson & Funck, 2019).

Based on RBV theory, EMCS can be regarded as a strategic resource contributing to competitive advantage. RBV posits that organizations achieve sustainability by leveraging unique, rare, and inimitable resources, including EMCS, which facilitates strategic environmental resource management (Ferasso et al., 2020; Svensson & Funck, 2019). Ethical Leadership also plays an essential role in advancing sustainability, as ethical leaders possess integrity, social responsibility, and strategic foresight to guide environmental initiatives (De Roeck & Farooq, 2018; Pasricha et al., 2018). From an RBV perspective, ethical leadership can be considered an intangible asset that fosters a sustainability-oriented organizational culture. However, the findings confirm that ethical leadership alone is insufficient to drive strategic environmental decision-making; it must be integrated through formal mechanisms such as EMCS to be effective.

## 6. CONCLUSION

This study concludes that environmental performance has become a strategic priority for organizations, including MSMEs, in the face of global sustainability challenges. Ethical Leadership, EMCS, and Circular Economy play critical roles in enhancing environmental performance. The integration of these three factors represents a synergistic resource base that is difficult to imitate, providing MSMEs with a potential competitive advantage.

The study further highlights that ethical leadership requires systematic support through EMCS to yield a meaningful environmental impact. Therefore, organizations should strengthen ethical leadership capacity through sustainability-focused training, develop comprehensive EMCS frameworks to integrate environmental strategies into business processes, and gradually adopt circular economy practices as part of a long-term sustainability commitment.

## 7. PRACTICAL IMPLICATIONS AND LIMITATIONS

From a practical perspective, MSME owners can utilize the findings to design more effective sustainability

initiatives, while policymakers may consider crafting policies that foster circular economy adoption and environmental performance improvements among MSMEs.

However, the study is subject to several limitations. First, it relies on self-reported measures of environmental performance, which may introduce potential bias. Second, the study does not explore the role of external factors, such as market dynamics or regulatory interventions. Future research should examine the interplay between internal and external factors influencing environmental performance and conduct cross-cultural comparisons to capture variations in Ethical Leadership, EMCS, and Circular Economy practices across different regions.

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