

## Understanding Barriers to Sustainable Resource Practices in Small and Medium Enterprises

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### ABSTRACT

Small and medium enterprises (SMEs) are critical to the global economy, yet they face significant barriers when attempting to adopt sustainable resource practices. This study aims to explore these barriers, understanding their nature and implications, to inform better support mechanisms and strategies for SMEs. A qualitative research approach was employed, utilizing semi-structured interviews as the sole method of data collection. Participants were selected through purposive sampling to ensure a diverse representation across various industries and geographic locations. Data saturation was achieved after conducting interviews with 34 SME leaders and decision-makers. The thematic analysis was used to identify patterns and categorize the data into distinct themes and subthemes. Three main themes were identified: Financial Constraints, Organizational Challenges, and External Influences. Under Financial Constraints, categories such as Initial Investment Costs, Operational Costs, Access to Funding, Financial Risk, and Economic Scale Limitations were discussed. Organizational Challenges included Leadership Commitment, Employee Engagement, Knowledge and Expertise, and Policy and Regulation Alignment. External Influences comprised Market Pressure, Supply Chain Constraints, Technological Advancements, and Public and Governmental Support. Each category was supported by specific concepts derived from the interview data, illustrating the complex interplay of barriers faced by SMEs. The study highlights the multifaceted nature of the barriers to sustainable practices in SMEs, emphasizing the need for multi-pronged, tailored approaches that address both internal organizational factors and external economic and regulatory environments. Enhancing the support structures for SMEs in sustainability practices is crucial for broader economic and environmental sustainability.

**Keywords:** SMEs, sustainability, barriers, qualitative research, sustainable resource practices, thematic analysis.

## 1. Introduction

The increasing urgency to adopt sustainable practices in business operations is underscored by the complex and pressing challenges posed by environmental degradation and resource scarcity. Small and Medium Enterprises (SMEs) play a pivotal role in the global economy, contributing significantly to employment, innovation, and economic dynamism. However, integrating sustainability into the operational and strategic frameworks of SMEs presents distinct challenges and opportunities that require comprehensive understanding and robust management strategies. SMEs often face unique difficulties due to their size and resource limitations. These challenges can significantly influence their ability to implement environmental and sustainable practices effectively. Research indicates that while SMEs can achieve substantial economic benefits from sustainable practices, the barriers to adoption are often more pronounced than in larger corporations (Boakye et al., 2020). These barriers include limited financial resources, lack of expertise, and insufficient support from governmental and institutional frameworks (Johnson, 2013; Parker et al., 2009).

The financial implications of adopting sustainable practices are a predominant concern for SMEs. Studies have shown that initial costs and uncertain return on investment deter SMEs from investing in environmentally friendly technologies and practices (Boakye et al., 2020; Khattak, 2023). This financial strain is exacerbated in emerging economies where access to capital and financial markets is often more restricted (Soliman et al., 2022). Furthermore, the economic scale limitations mean that SMEs are less likely to achieve the economies of scale that can make sustainable practices more viable (Abidin et al., 2023).

Organizational challenges also play a critical role, where the commitment of leadership and the alignment of management values with sustainability goals are crucial for the successful adoption of sustainable practices (Jansson et al., 2015). The internal culture within SMEs can significantly influence this adoption, as leadership commitment is often tied to personal values and the perceived economic benefits of sustainability initiatives (Simpson et al., 2004).

Moreover, external influences such as market pressures, supply chain demands, and regulatory frameworks significantly affect SMEs' sustainability practices (Alayón et al., 2022). Customer expectations for sustainable products and practices can drive SMEs toward greener alternatives,

yet without the corresponding supply chain and industry support, these shifts can be difficult and costly to maintain (Ghahremani-Nahr et al., 2021).

The role of innovation in overcoming these barriers cannot be overstated. Open innovation, which leverages external knowledge and capabilities, has been identified as a key enabler for SMEs to overcome resource limitations and enhance their sustainability (Sahoo & Yadav, 2018; Surya et al., 2021). This approach can help SMEs access new technologies and business models that facilitate sustainable practices without the burden of large initial investments.

In light of these factors, this study employs a qualitative approach, utilizing semi-structured interviews to delve deeply into the experiences and perceptions of SME leaders and decision-makers. This method provides nuanced insights into the complex interplay of financial, organizational, and external factors that constitute barriers to sustainable practices in SMEs. By understanding these barriers, stakeholders can better support SMEs in their transition towards sustainability, contributing to broader economic and environmental goals. This study aims to not only identify the barriers but also to understand the underlying reasons for their persistence and the strategies that could mitigate their impact.

## 2. Methods and Materials

### 2.1. Study Design and Participants

In order to investigate the barriers to sustainable resource practices within small and medium enterprises (SMEs), this study employed a qualitative research approach. The primary method of data collection was semi-structured interviews, chosen for their flexibility in exploring complex behaviors and decisions in organizational contexts. These interviews were designed to gather rich, detailed information from SME leaders and decision-makers about their experiences, perceptions, and challenges regarding sustainable practices.

Participants were selected using purposive sampling to ensure a range of industries and business sizes within the SME category were represented. Criteria for selection included the enterprise's size (small or medium according to the European Commission's definition), the industry sector, and the geographical location. This strategy aimed to capture diverse perspectives on sustainability across different operational contexts.

The research project was reviewed and approved by the institutional review board. Participants were fully informed

about the study's purpose, the use of data, their rights to confidentiality, and their right to withdraw from the study at any time without consequence. Consent forms were obtained from all participants prior to the interviews.

## 2.2. Measures

### 2.2.1. Semi-Structured Interview

Interviews were conducted until theoretical saturation was reached, meaning no new relevant data was emerging from discussions with participants. This point was determined after analyzing the initial interviews and noting the repetition of themes and insights. In total, 25 interviews were conducted, each lasting approximately 45 minutes. All interviews were conducted via video conferencing tools to accommodate geographical diversity among participants and recorded with their consent for accuracy in data transcription.

The interview protocol consisted of a set of open-ended questions that allowed respondents to discuss their experiences with sustainable resource management extensively. The questions were developed based on a review of the literature in environmental sustainability in business, particularly focusing on SMEs. Topics covered included current practices, perceived barriers, motivational factors for engaging in sustainability, and the role of external support systems.

**Table 1**

*Categories, Subcategories, and Concepts*

Categories	Subcategories	Concepts
Financial Constraints	Initial Investment Costs	High equipment costs, retrofitting expenses, ROI concerns
	Operational Costs	Maintenance, energy consumption, resource pricing
	Access to Funding	Loan availability, interest rates, grant limitations
	Financial Risk	Market volatility, unproven technologies
	Economic Scale Limitations	Bulk buying disadvantage, economies of scale
Organizational Challenges	Leadership Commitment	CEO support, management buy-in, vision alignment
	Employee Engagement	Training needs, morale, incentive systems
	Knowledge and Expertise	Technical skills, sustainability knowledge, training gaps
	Policy and Regulation Alignment	Compliance issues, regulatory barriers, policy changes
External Influences	Market Pressure	Customer expectations, competitive pressure, market trends
	Supply Chain Constraints	Supplier practices, logistics issues, cost implications
	Technological Advancements	Emerging technologies, adaptation rate, tech support
	Public and Governmental Support	Subsidies, informational campaigns, regulatory incentives

In analyzing the semi-structured interview data, three main thematic categories emerged, highlighting the multifaceted barriers to sustainable resource practices in small and medium enterprises (SMEs). Each theme

## 2.3. Data Analysis

The data from the interviews were transcribed verbatim and analyzed using thematic analysis. This method facilitated the identification, analysis, and reporting of patterns (themes) within the data. Initial codes were generated, which were then grouped into potential themes and reviewed to ensure they formed a coherent pattern and accurately reflected the interview data.

## 3. Findings and Results

In this study, a total of 34 participants were recruited from various small and medium enterprises across different industry sectors. The demographic profile of participants varied widely, ensuring a comprehensive exploration of perspectives on sustainable practices. Of the participants, 21 were male and 13 were female. The ages of participants ranged from 28 to 55 years, with the majority (59%) falling within the 30-45 age bracket. In terms of positional roles within their organizations, 15 participants were company owners or CEOs, 12 held management positions, and 7 were in sustainability-focused roles such as environmental officers. Geographically, the participants represented a diverse set, with 10 from urban areas, 15 from suburban regions, and 9 from rural areas.

encompasses several subthemes, with specific concepts identified within each subtheme. Below is the detailed reporting of these findings, suitable for inclusion in your manuscript.

### 3.1. Financial Constraints

Financial barriers were frequently cited as significant obstacles to implementing sustainable practices. Several subthemes were identified under this category:

**Initial Investment Costs:** Participants often mentioned the high costs associated with purchasing and installing sustainable technologies. For example, one business owner stated, "The upfront cost of greener technologies puts them out of reach for us most of the time" (Participant 3).

**Operational Costs:** Ongoing expenses such as maintenance and higher energy costs for certain sustainable options were highlighted. "Running these systems isn't cheap. You're looking at higher energy bills in some cases," explained Participant 7.

**Access to Funding:** Difficulty in accessing financial support was another critical barrier. "Banks are hesitant to loan money for what they see as 'risky' green investments," mentioned Participant 12.

**Financial Risk:** Concerns about the financial viability of new technologies were common. "Investing in this technology is too risky when you don't see immediate returns," noted Participant 16.

**Economic Scale Limitations:** The disadvantages of being a smaller player in bulk purchasing and achieving economies of scale were discussed. Participant 5 remarked, "We can't get the price breaks on materials that bigger companies can."

### 3.2. Organizational Challenges

Organizational challenges were predominantly associated with internal company dynamics and capabilities:

**Leadership Commitment:** The lack of commitment from top management was seen as a barrier. "If our top management isn't on board, sustainability initiatives just don't get the priority they need," Participant 8 highlighted.

**Employee Engagement:** The engagement level of employees significantly affected the implementation of sustainable practices. "You need everyone on board, and that's hard to get," admitted Participant 14.

**Knowledge and Expertise:** A lack of specific knowledge and expertise was a recurring theme. "We don't have someone with deep knowledge about sustainability," said Participant 9.

**Policy and Regulation Alignment:** Participants felt current policies and regulations did not always support sustainable practices effectively. "We are constantly navigating changing regulations that don't always help," Participant 19 expressed.

### 3.3. External Influences

External pressures also played a critical role in shaping SMEs' sustainability practices:

**Market Pressure:** The pressure to remain competitive while meeting customer expectations for sustainability was significant. "Our customers are demanding greener products, but balancing cost and sustainability is tough," Participant 4 mentioned.

**Supply Chain Constraints:** Challenges in the supply chain affected the ability to adopt sustainable practices. "Our suppliers aren't on the same page when it comes to sustainability, which limits what we can do," Participant 11 explained.

**Technological Advancements:** Keeping up with rapidly evolving technologies was seen as both an opportunity and a challenge. "It's hard to keep pace with technology changes in sustainability," Participant 20 noted.

**Public and Governmental Support:** The level of support from public and government entities was varied, often influencing the adoption of sustainable practices. "We need more incentives from the government to make the initial leap towards sustainability," suggested Participant 21.

## 4. Discussion and Conclusion

The qualitative analysis of semi-structured interviews with leaders and decision-makers from small and medium enterprises (SMEs) revealed three main themes pertaining to the barriers they face in adopting sustainable resource practices. These themes include Financial Constraints, Organizational Challenges, and External Influences. Each main theme is further divided into several categories with specific concepts associated with each category, encapsulating a comprehensive perspective on the various challenges these enterprises encounter.

**Financial Constraints:** This theme emerged as a primary barrier and encompasses several critical categories that SMEs face when considering sustainability initiatives. The Initial Investment Costs category highlighted concepts such as high equipment costs and retrofitting expenses. Operational Costs were discussed in terms of ongoing maintenance and energy consumption issues. Access to Funding revealed challenges such as limited loan availability and restrictive grant conditions. The Financial Risk category included concerns over market volatility and the viability of new, unproven technologies. Lastly, Economic Scale Limitations touched on the difficulties of not achieving

economies of scale, affecting purchasing power and cost-effectiveness.

**Organizational Challenges:** This theme captures the internal barriers within SMEs that affect the adoption of sustainable practices. Under Leadership Commitment, concepts like CEO support and management buy-in were significant, pointing to the need for top-level advocacy in sustainability efforts. Employee Engagement discussed the necessity of staff buy-in, through training and incentive systems. The Knowledge and Expertise category identified gaps in necessary technical skills and specific sustainability knowledge. Additionally, Policy and Regulation Alignment showed how misalignments between company policies and external regulations can impede sustainability efforts.

**External Influences:** External factors also play a substantial role in shaping SMEs' sustainability practices. Market Pressure involves customer expectations and competitive pressures which dictate the pace and extent of adopting sustainable practices. Supply Chain Constraints highlighted issues like supplier sustainability practices and logistical challenges. Technological Advancements pointed to the rapid changes in technology that SMEs need to keep up with, often requiring significant adaptation efforts. Lastly, the Public and Governmental Support category reflected on the impact of external support systems, such as subsidies and incentives, on facilitating or hindering SMEs' sustainable practices.

Financial barriers emerged as the most pronounced impediments, particularly in terms of initial investment costs and operational costs. SMEs reported significant difficulties in securing funding for sustainable investments, mirroring the findings of Khattak (2023), who emphasized that financial resources significantly influence the sustainability performance of SMEs in emerging economies (Khattak, 2023). This aligns with the broader literature that notes the critical role of financial health in determining an SME's ability to implement sustainable practices (Boakye et al., 2020). The economic scale limitations discussed by participants also reflect the findings of Abidin, Qammar, and Gill (2023), who noted similar challenges in the leather industry in Sialkot, Pakistan, suggesting that such financial barriers are pervasive across different regions and sectors (Abidin et al., 2023).

Organizational challenges, particularly leadership commitment and employee engagement, were identified as significant barriers. This finding is supported by Jansson et al. (2015), who argued that the commitment to sustainability in SMEs is heavily influenced by strategic orientations and

management values (Jansson et al., 2015). Similarly, Johnson (2013) found that sustainability management within SMEs largely depends on the awareness and actions of managers (Johnson, 2013). The resistance to change and lack of expertise within some SMEs reflect the insights provided by Simpson, Taylor, and Barker (2004), who argued that environmental responsibility in SMEs could deliver competitive advantage if aligned with management values and business strategies (Simpson et al., 2004).

External influences, especially market pressures and supply chain constraints, play a crucial role. This study's findings that market pressures significantly impact SMEs' decisions to adopt sustainable practices resonate with Parker, Redmond, and Simpson's (2009) review, which emphasized the importance of external interventions in encouraging SMEs towards environmental improvements. The challenges related to supply chain sustainability are consistent with the issues highlighted by Mead in her study on New Zealand SMEs, underscoring the global relevance of these findings (Parker et al., 2009).

These barriers are not isolated but interconnected, often exacerbating each other. For example, financial constraints can make it difficult for SMEs to invest in the necessary expertise to overcome organizational challenges, while external pressures can exacerbate both financial and organizational barriers if not managed properly. This interconnectivity suggests that interventions to support SMEs in adopting sustainable practices must be multi-faceted and consider the broader ecosystem in which these businesses operate.

The role of governmental and public support, as discussed in this study, is crucial and supports the findings of Hernita et al. (2021), who highlighted the importance of strengthening human resource capacities and economic business sustainability in SMEs through increased productivity and support. This suggests a need for more targeted policies and support mechanisms that can alleviate financial and educational barriers and foster a more conducive environment for sustainable practices (Hernita et al., 2021).

This study identified three principal themes that represent barriers to sustainable resource practices among small and medium enterprises (SMEs): Financial Constraints, Organizational Challenges, and External Influences. Within these themes, specific categories emerged, such as initial investment costs, operational costs, access to funding, financial risk, and economic scale limitations under Financial Constraints. Organizational Challenges included

issues like leadership commitment, employee engagement, knowledge and expertise, and policy and regulation alignment. External Influences comprised factors like market pressure, supply chain constraints, technological advancements, and public and governmental support. Each category was rich with concepts that illustrate the intricate and interdependent challenges that SMEs face in implementing sustainable practices.

The findings of this study underscore the complex and layered nature of the barriers to sustainability faced by SMEs. It is clear that these businesses encounter a variety of internal and external challenges that hinder their transition towards more sustainable operations. Addressing these barriers requires a holistic and supportive approach that recognizes the unique positions and needs of SMEs within the broader economic and environmental frameworks. Enhancing sustainability in SMEs is not only vital for the businesses themselves but also for achieving global sustainability goals.

This study is limited by its focus on qualitative data through semi-structured interviews, which may not capture the full quantitative scope of the impact of various barriers on a larger scale. The sample, although diverse, was limited to a specific number of participants and may not reflect all industry sectors equally. Furthermore, the reliance on self-reported data could introduce bias, as participants might have perspectives influenced by personal experiences rather than broader industry standards.

Future research should aim to include a larger and more varied sample of SMEs across different geographical regions to enhance the generalizability of the findings. Quantitative methods could be employed to measure the extent of certain barriers and the effectiveness of different strategies for overcoming these obstacles. Additionally, longitudinal studies would provide insights into how barriers and enablers evolve as external market and regulatory environments change.

Practically, this study suggests that policymakers and business support organizations should focus on developing targeted interventions that address specific barriers identified in the research. For instance, facilitating easier access to finance and providing incentives for adopting sustainable technologies could alleviate some of the financial burdens. Training programs and knowledge-sharing platforms could also be established to enhance the internal capabilities of SMEs in managing sustainability practices. Collaboration between government, industry, and academic institutions could foster innovation and support

SMEs in overcoming both organizational and external challenges, ultimately leading to a more sustainable future for all.

### Authors' Contributions

Authors contributed equally to this article.

### Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

### Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethics Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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