

Impact of Circular Economy Practices on Micro Business Performance

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Abstract

Micro entrepreneurs constitute a vital segment of local economies by supporting employment generation and grassroots economic activity. Despite their significance, limited empirical attention has been given to their engagement with sustainability-oriented practices, particularly within the framework of the circular economy. This study investigates the extent of adoption of circular economy practices among micro entrepreneurs and examines their impact on business performance. Employing a survey-based research design, primary data were collected from micro entrepreneurs operating in both rural and urban areas of Dakshina Kannada district. Circular economy initiatives were analysed through dimensions such as material reuse, waste reduction, recycling, energy-saving and operational efficiency activities. Descriptive and inferential statistical techniques were applied to identify and assess the circular economy practices adopted in their day-to-day business activities and to examine the relationship between circular economy initiatives and micro business performance. The findings reveal a positive and significant association between circular economy practices and business performance among micro enterprises. By providing context-specific empirical evidence, the

study offers policy-relevant insights for fostering sustainable practices among micro entrepreneurs and support programmes targeting grassroots entrepreneurship.

Keywords: Circular economy, Micro enterprises, Business performance.

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Introduction

The concept of the circular economy (CE) has gained growing attention in recent years as an alternative to the traditional linear “take–make–dispose” economic model. Unlike linear systems, the circular economy focuses on improving resource efficiency, reducing waste, and promoting the reuse and recycling of materials within production and consumption processes (Kirchherr et al., 2017). These principles are increasingly viewed as important for achieving long-term sustainability as well as improving business performance.

Most existing studies on circular economy practices have concentrated on large organisations and industrial sectors, where financial resources and technological capabilities are relatively strong. In contrast, micro-enterprises have received much less empirical attention, particularly in developing countries. This is notable because micro businesses account for more than 90 per cent of enterprises worldwide and play a crucial role in employment generation, innovation, and local economic development (Bassi et al., 2022; Sohal et al., 2022). Due to their small size and limited resources, micro enterprises often face challenges in adopting formal sustainability frameworks, yet they frequently engage in informal practices such as material reuse and waste reduction.

In the Indian context, micro-entrepreneurs demonstrate practical and adaptive approaches to managing resources, energy consumption, and waste in their daily operations. These characteristics make micro enterprises a relevant and important context for examining the relationship between circular economy practices and business performance (Thopte et al., 2025). However, empirical evidence linking circular economy initiatives to performance outcomes at the micro-enterprise level remains limited.

Research Objectives

1. **To identify and assess the circular economy practices adopted by micro enterprises in their routine business activities.**
2. **To examine the relationship between circular economy initiatives and micro business performance.**

Research Questions

- **RQ1:** What are the commonly adopted circular economy practices among micro enterprises?
- **RQ2:** What is the impact of these circular economy practices on micro business performance?

Hypothesis

- **H₁:** Circular economy initiatives have a significant positive relationship with micro business performance.

By focusing on snowball-sampled micro-entrepreneurs in a resource-constrained regional setting, this study contributes context-specific empirical evidence to the existing literature and offers insights that may support policy formulation and targeted interventions for promoting sustainable practices among micro enterprises.

Literature Review

The literature on the circular economy (CE) has expanded rapidly over the past decade, establishing CE as a critical approach for decoupling economic growth from resource consumption through strategies such as reduction, reuse, recycling, and regeneration (Arruda et al., 2021; Kirchherr et al., 2017). Early research primarily focused on conceptual clarification and macro-level policy perspectives, while more recent studies have shifted toward the firm level, exploring how businesses operationalize CE principles within their business models and value chains (Pieroni et al., 2019; Reim et al., 2019).

Within this firm-level literature, small and medium-sized enterprises (SMEs) have attracted particular attention. SMEs dominate national economies and confront both unique challenges and opportunities when adopting CE practices. These include limited financial and technological resources, knowledge gaps, and restricted access to advanced technologies, as well as greater flexibility and the ability to target niche markets effectively (Bassi & Dias, 2022; Reim, 2025). Empirical evidence suggests that CE adoption in SMEs can result in cost reductions, efficiency gains, enhanced reputation, and the creation of new markets, particularly when circular practices are embedded in operational processes and supported by innovation and collaboration with ecosystem partners (Suchek et al., 2022; Reim, 2025).

Despite these advances, several reviews note that most empirical evidence originates from European or high-income contexts. Micro-enterprises and informal-sector businesses in developing economies remain underrepresented, particularly in terms of quantitative assessments linking CE practices, operational efficiency, and business performance (Thorley, 2019; Thopte et al., 2025). Existing studies on micro, small, and medium enterprises (MSMEs) in emerging economies are often qualitative or conceptual, emphasizing barriers and enablers rather than rigorously testing the relationship between CE practices and performance outcomes (CITAKonsultindo, 2024; Thopte et al., 2025). This creates a distinct research gap regarding how micro businesses implement CE initiatives in routine operations and the extent to which these initiatives translate into measurable performance benefits under resource-constrained conditions.

Despite growing research on circular economy practices, evidence from micro enterprises in developing economies remains limited, particularly regarding the relationship between CE initiatives and business performance. Addressing this gap, the present study focuses on micro-entrepreneurs in Dakshina Kannada, Karnataka, providing context-specific empirical evidence to inform policies and programs supporting grassroots entrepreneurship.

Research Methodology

This study employed a quantitative, cross-sectional design to examine the impact of circular economy practices on micro business performance in Dakshina Kannada. Sample size adequacy was assessed using G*Power 3.1, which indicated a minimum required sample of 85 respondents based on a medium effect size ($f^2 = 0.15$), a 5% significance level, 80% statistical power, and four predictor variables; the final sample of 103 micro-entrepreneurs therefore exceeded this requirement. Data were collected from 103 micro-entrepreneurs, selected through snowball sampling across manufacturing, trading, and service sectors.

A structured questionnaire measured circular economy initiatives, operational efficiency, and business performance using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The data were first analyzed for reliability, with the instrument demonstrating high internal consistency (Cronbach's $\alpha > 0.7$ for all constructs; overall $\alpha = 0.9512$). Convergent validity was confirmed through theoretically expected positive inter-correlations between related constructs ($r > 0.70$), indicating that the questionnaire accurately measured circular economy practices and performance dimensions. Subsequently, descriptive statistics were computed, followed by Pearson correlation and simple linear regression to test the hypothesized relationship.

Data Analysis

Table 1: Demographic Profile of the Respondents

Variable	Category	Frequency	%
Respondent Age	Below 30 years	21	20.4
	31–40 years	45	43.7
	41–50 years	19	18.4
	Above 50 years	18	17.5
Gender	Male	75	72.8
	Female	28	27.2
Education Level	Up to SSLC	18	17.5
	PUC	26	25.2
	Graduate/Diploma	45	43.7
	Postgraduate and above	14	13.6
Business Type	Manufacturing	12	11.7
	Service	63	61.2
	Trading	28	27.2
Years Operation	Less than 3 years	21	20.4
	3–5 years	20	19.4
	More than 5 years	62	60.2
Employees	1–5	75	72.8
	6–10	19	18.4
	More than 10	9	8.7
Location	Rural	56	54.4
	Urban	47	45.6
Udyam Registration	Yes	46	44.7
	No	38	36.9
	Not aware	19	18.4

Source: Author's Work

The demographic profile of the 103 micro-entrepreneurs from Dakshina Kannada indicates that the majority of respondents were male (72.8%), with most falling within the 31–40 years age group (43.7%). In terms of educational attainment, graduates and diploma holders constituted the largest proportion (43.7%) of the sample. The service sector dominated (61.2%), followed by trading (27.2%) and manufacturing (11.7%) enterprises. A significant proportion of businesses had been in operation for more than five years (60.2%), and most employed between one and five employees (72.8%), reflecting the micro-enterprise nature of the sample. With respect to location, rural enterprises (54.4%) slightly outnumbered urban enterprises (45.6%). Regarding formal registration, 44.7% of respondents reported having Udyam registration, 36.9% were not registered, and 18.4% were unaware of the Udyam registration scheme.

Table 2: Descriptive Statistics of Circular Economy Practices

Statistic	Material Reuse	Waste Reduction	Waste Recycling	Energy Saving
Mean	3.66	4.03	3.87	3.85
SD	1.06	0.89	1.04	0.88
Min	1.00	1.00	1.00	1.00
Max	5.00	5.00	5.00	5.00

The descriptive statistics for circular economy practices among the 103 micro-entrepreneurs in Dakshina Kannada indicate moderate to high levels of adoption. Waste Reduction recorded the highest mean score ($M = 4.03$, $SD = 0.89$), reflecting consistent agreement on routine waste management activities. Material Reuse showed a relatively lower mean ($M = 3.66$, $SD = 1.06$), while Waste Recycling ($M = 3.87$, $SD = 1.04$) and Energy Saving ($M = 3.85$, $SD = 0.88$) were clustered near the “Agree” threshold. Overall, the results suggest that micro-enterprises adopt circular economy initiatives to varying degrees, with waste reduction practices being the most widely implemented.

Table 3: Pearson Correlations and Simple Regression Results for the study variables

Hypothesis	Variables	r	p	β	t	p	R^2
H ₁	CE Initiatives (4 core) → Business Performance	0.782	<0.001	0.685	12.41	<0.001	0.612

Note: N = 103; r = Pearson correlation coefficient; β = standardized regression coefficient; t = t-statistic from regression analysis; R^2 = coefficient of determination; p-values indicate significance.

H₁: Circular economy initiatives—measured as the composite mean of Material Reuse, Waste Reduction, Waste Recycling and Energy Saving were positively and significantly correlated with micro business performance (composite mean) ($r = 0.782$, $p < 0.001$). Simple linear regression analysis further confirmed that circular economy initiatives significantly predicted micro business performance ($\beta = 0.685$, $t = 12.41$, $p < 0.001$), explaining 61.2% of the variance in business performance ($R^2 = 0.612$).

These findings provide strong empirical support for H₁, indicating that the adoption of comprehensive circular economy practices substantially contributes to improved performance among micro enterprises.

Discussion

The findings show moderate to high adoption of circular economy (CE) practices among micro enterprises in Dakshina Kannada, with waste reduction emerging as the most widely adopted practice and material reuse the least. This pattern aligns with prior research indicating that waste-related practices are more accessible and cost-effective for small firms. The study reveals a strong positive relationship between CE practices and micro business performance, with circular initiatives explaining a substantial share of performance variance. Compared to earlier SME-focused studies, this relationship appears stronger, suggesting that micro enterprises may realize more immediate benefits from CE adoption due to their direct cost-profit linkages and limited overhead structures. In resource-constrained contexts, even incremental improvements in waste and energy management can significantly enhance operational outcomes. The results extend circular economy theory by demonstrating that basic, low-complexity CE practices are sufficient to improve performance in micro enterprise settings. From a practical perspective, targeted support for simple waste and energy efficiency measures can strengthen micro business sustainability.

Conclusion

This study investigated the relationship between circular economy practices and micro business performance in Dakshina Kannada. The results confirm that core circular practices material reuse, waste reduction, recycling, and energy saving significantly enhance business performance, with waste reduction showing the strongest adoption. The findings extend circular economy literature to micro enterprises in a developing economy, demonstrating that simple, low-cost practices can yield substantial performance benefits. Policy efforts should therefore promote operationally feasible circular practices. The study is limited by its cross-sectional design, single-district focus, and self-reported data. Future research should employ longitudinal and multi-region analyses.

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