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SPECIAL ISSUE: CELEBRATING 20 YEARS OF GEOGRAPHY IN KADUNA STATE UNIVERSITY - ADVANCES AND FRONTIERS IN GEOGRAPHY

Challenges in the Adoption of Circular Economy Practices among Small and Medium Enterprises (SMEs) in Awka, Anambra State, Nigeria

Chidera Ezeh [a], Samuel Oji Iheukwumere [a], Kelechi Friday Nkwocha [b]

[a] Department of Geography and Meteorology, Nnamdi Azikiwe University, Awka, Nigeria. [b]Department of Geography, Islamic University, Uganda/University of Maiduguri, Borno State, Nigeria.

ABSTRACT

The global shift toward sustainable development emphasizes an all-sector transition from a linear economy to a circular economy, inclusive of small and medium-sized enterprises (SMEs). This study investigates the challenges faced by Small and Medium Enterprises (SMEs) in adopting Circular Economy (CE) initiatives in Awka, Anambra State. Using a survey of 100 SME owners and managers across hospitality, retail, manufacturing, and service sectors, the research explores challenges and motivating factors of CE adoption by SMEs through purposive sampling. Data was analysed using percentages, means, and ranking. Challenges identified include lack of awareness and information (21%), followed by lack of technical knowledge (20%) and financial constraints (19%). Ranking the severity of the challenges showed that lack of government incentive, lack of awareness, and financial constraints ranked first, second, and third, respectively. The two most significant motivating factors encouraging adoption of CE stem from the benefits derived, which are the reduction of operation cost (26%) and environmental sustainability (25%). The study concludes that CE adoption in Awka is at an early stage, driven mainly by environmental concerns and cost-saving motives. It recommends targeted training, financial incentives, and supportive policies to strengthen SMEs' capacity for sustainable practices, thereby promoting environmental protection and economic resilience in the region.

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1 Introduction

Circular economy (CE) has emerged as an innovative and sustainable model that departs from the traditional linear system of "Resource-Product-Waste" and embraces a self-sustaining sequence of activities to recover raw materials, intermediate products, and finished goods (Jabbour et al., 2018). Contrary to the traditional linear system ("Resource-Product-Waste"), CE gained popularity by developing various alternatives for environmental and economic concerns, involving reducing, recycling, and reusing. It can be implemented at three levels (micro, meso, and macro) to reduce resource consumption and the material loops promoting sustainable development (Kirchherr et al., 2017). CE promotes repair, refurbishing, recycling, reuse, design, and manufacture, and eco-effective development to stop dumping (Reike et al., 2018). The technical cycle focuses on keeping the value of products in good shape through sharing, reselling, maintenance, repair, and refurbishment. Remanufacturing and recycling help keep materials in the economy after a product has reached the end of its useful life (Ellen MacArthur Foundation, 2019a). These practices increase an organization's capacity for eliminating waste and decreasing dependency on primary resources through real-time reasoning (Genovese et al., 2017).

The current global shift toward sustainable development emphasizes the transition from a linear economy to a circular economy (CE), yet the adoption rate remains critically low, with only 8.6% (Afum et al., 2020; Tan et al., 2022). Although large firms have increasingly embraced CE practices, small and medium-sized enterprises (SMEs), which make up about 90% of businesses worldwide and contribute significantly to environmental degradation lags in meaningful adoption (World Bank, 2023).

In Nigeria, this challenge is more pressing. The country generates an estimated 32 million tonnes of waste annually (Vanguard News, 2024; Maiha & Yusuf, 2025), ranking among Africa's highest producers of unmanaged waste. Despite the significant benefits associated with circular economy practices, e.g., market differentiation, reduced cost in the long-term, opening up of new market streams, resource efficiency, resilience to environmental risks, and creating competitive advantage (Mura et al., 2020), the reality is that many SMEs are unable to engage in a meaningful way (Tura et al., 2019; Lüdeke-Freund et al., 2019; Morseletto, 2020; Dey et al., 2022; Carlos et al., 2024). Even when they do engage, evidence shows that the implementation of sustainable or circular practices is slow and on a piecemeal basis (Ellen MacArthur Foundation, 2015, 2019b).

Despite the opportunities that the circular economy

Corresponding Author: S. O. Iheukwumere so.iheukwumere@unizik.edu.ng Department of Geography and Meteorology, Nnamdi Azikiwe University, Awka, Nigeria

offers to the SMEs, there is little to no documented evidence on the specific challenges that SMEs in Awka face in adopting the CE initiatives.

This knowledge gap makes it difficult for policymakers, business support organizations, and even the SMEs themselves to design interventions that would facilitate a smooth transition from linear to circular business models. Therefore, the study seeks to address the lack of empirical evidence on the challenges hindering the adoption of the circular economy initiative among SMEs in Awka. Without such insights, SMEs remain poorly positioned to contribute effectively to Nigeria's sustainability agenda, and the potential economic and environmental benefits of circularity remain unrealized.

2 Materials and Methods

2.1 Study Area

Awka, the study location, is the administrative capital of Anambra State, southeast Nigeria. Located between latitudes 6° 09' N and 6° 19' N, and longitudes 7° 01' E and 7° 12' E (Fig. 1), Awka is primarily an administrative town, since many state and federal institutions are located there. However, many small and medium enterprises exist within and around the town.

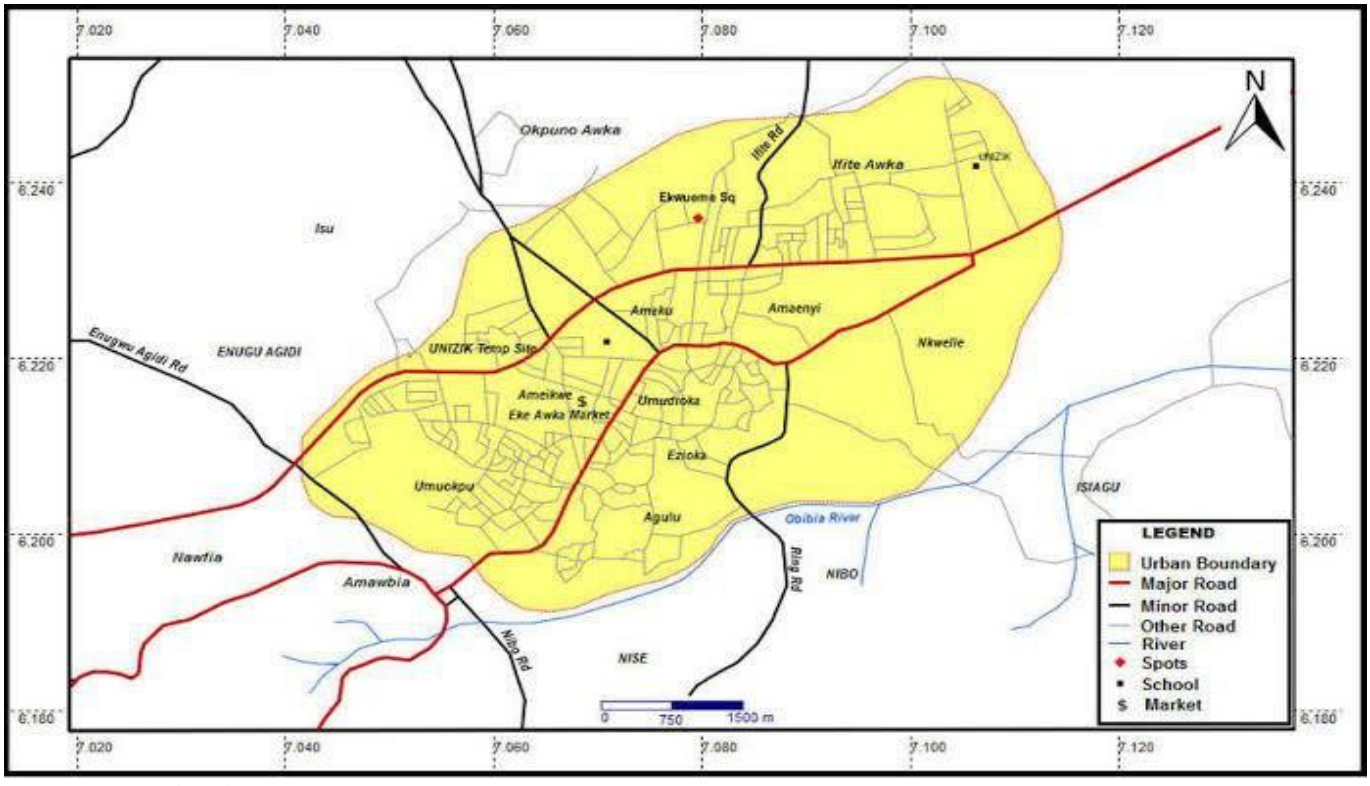

Figure 1: Map of Awka
Source: Awka Capital Development Authority 2017

2.2 Methods

For this research, the survey method was used. This involved questionnaire administration to respondents who were SME owners or managers. A total of 100 SME owners and managers were purposively selected and sampled based on their availability and relevance to the research. Stratified sampling was employed in identifying SMEs. The respondents were chosen from different business locations in Awka, such as Eke-Awka, Amawbia, Ifite, Aroma, and Unizik Junction, to ensure that the responses were collected from a wide range of business types and locations. The collated data were analysed by use of percentage distribution, means, and ranking.

3 Results

3.1 Identification of challenges in adopting the circular economy by SMEs

This section presents findings on the barriers that hinder SMEs in Awka from adopting or expanding circular economy (CE) initiatives. The results cover perceived challenges, the seriousness of these challenges, and whether businesses have attempted to overcome them. This provides insight into the systemic and operational constraints limiting CE implementation among SMEs.

Table 1: Challenges to CE Adoption

Response	Frequency	Percentage (%)
Lack of awareness/information	52	21
Lack of technical knowledge or expertise	49	20
Lack of financial resources	46	19
Poor government support or policy	40	16
Customer resistance	35	14
Difficulty accessing recycling facilities	25	10
Others	0	0
Grand Total	**247**	**100**

Note: Respondents could pick multiple options, hence the frequency of 247

Table 1 shows that the most frequently cited challenge to CE adoption is lack of awareness and information (21%), followed by lack of technical knowledge (20%) and financial constraints (19%). Other significant barriers include poor government support/policy (16%) and customer resistance (14%), while 10% of SMEs reported difficulty accessing recycling facilities.

These findings reveal that SMEs in Awka face a combination of information, financial, and institutional barriers. Awareness and technical knowledge gaps show that many entrepreneurs lack the necessary understanding of how CE can be practically implemented. Financial limitations further constrain their ability to invest in new technologies or sustainable processes. Weak government support also discourages businesses from prioritizing CE, while customer resistance highlights the social dimension of adoption, where consumer attitudes may not yet favor sustainable products. Lincoln (2025) supports the finding that SMEs lack understanding of CE implementation. Lincoln added that many of the SMEs perceived investing in environmentally sustainable practices to be cost-intensive.

3.2 Ranking of Barriers by Severity

Respondents were required to rank the severity of the challenges they encountered in adopting circular economy initiatives while running their SMEs. Table 2 provides the ranking of barriers by severity.

Table 2: Severity of CE Barriers

Challenges	Mean	Standard Deviation	Percentage (%)	Ranking
Lack of Awareness	3.03	1.53	26	2
Financial Constraints	3.03	1.23	16	3
Technical Limitation	2.93	1.39	18	4
Lack of government incentives	3.41	1.35	28	1
Unwillingness to change from the current model	2.83	1.33	15	5

The most severe challenge was lack of government incentives (mean = 3.41), followed by lack of awareness (mean = 3.03) and financial constraints (mean = 3.03). Technical limitations (mean = 2.93) and unwillingness to change existing business models (mean = 2.83) were rated less severe (Table 2).

This ranking underscores the critical role of policy and institutional support in driving CE adoption. SMEs perceive the absence of incentives, subsidies, or enabling policies as the greatest obstacle, more serious than financial or technical limitations. It shows that many entrepreneurs are willing to adopt CE but lack external motivation and enabling conditions. This aligns with global evidence that effective CE transition in SMEs often requires strong policy backing (Kirchherr et al., 2017). The study by Mishra et al. (2025) suggests the urgent need for targeted policy interventions to enhance financial capacity, knowledge dissemination, and infrastructural support, collectively facilitating MSMEs' transition to CE practices.

3.3 Attempts to Overcome Challenges

This involves determining if respondents have attempted to initiate methods or processes to overcome identified challenges to adopting circular economy practices in the operation of their SMEs.

Table 3: Attempts to Overcome CE Challenges

Response	Frequency	Percentage (%)
Yes	23	23
No	77	77
Grand Total	**100**	**100**

Table 3 shows that only 23% of SMEs reported attempting to overcome challenges related to CE, while the majority (77%) had not made any effort. This highlights a passive stance towards overcoming barriers, possibly because of limited resources or a lack of practical solutions available to entrepreneurs.

The low rate of proactive response suggests that while SMEs recognize challenges, most lack the confidence or support structures to address them independently. This again underscores the need for institutional guidance, training, and partnerships to help SMEs overcome CE-related obstacles.

Table 4: Nature of Challenges Overcome

Response	Frequency	Percentage (%)
Customers resistance	1	1
Financial constraints	4	4
Lack of awareness/info	7	7
Lack of government support	9	9
No response	79	79
Grand Total	**100**	**100**

Among the SMEs that attempted to overcome CE challenges (Table 4), the most common issues addressed were lack of government support (9 cases) and lack of awareness/information (7 cases). Financial constraints were mentioned by 4 businesses, and customer resistance by 1. However, a large number (79 respondents) did not respond, further reflecting the limited efforts made to actively address barriers.

This finding suggests that the most pressing difficulties lie outside the control of SMEs themselves, particularly in areas where government and institutional support are lacking. Efforts to overcome informational barriers indicate that SMEs are willing to learn, but their progress is hindered by systemic shortcomings such as inadequate policies and limited access to finance

3.4 Factors motivating SMEs to adopt CE practices

This section examines the motivating factors that encourage SMEs in Awka to adopt circular economy (CE) practices. The results focus on the perceived benefits associated with CE, as well as how respondents rated the importance of different benefits in influencing adoption.

Table 5: Benefits Associated with CE Practices

Benefits	Frequency	Percentage (%)
Reduction of operation cost	67	26
Environmental sustainability	65	25
Improves business image	34	13
Increased customer loyalty	37	14
Opportunity for innovation	36	14
Access to a new market	22	8
Grand Total	**261**	**100**

Note: Respondents could pick multiple options, hence the frequency of 261

The results in Table 5 reveal that the most widely recognized benefits of CE adoption are the reduction of operational costs (26%) and environmental sustainability (25%). These two factors dominate as the strongest motivators, indicating that SMEs are encouraged by both economic and environmental gains. Other important benefits identified include increased customer loyalty (14%), opportunity for innovation (14%), and improved business image (13%). However, fewer SMEs associated CE with access to new markets (8%), suggesting that market expansion through CE is not yet strongly perceived among local entrepreneurs. Overall, the findings indicate that SMEs in Awka are motivated by tangible and immediate benefits, especially cost savings and sustainability outcomes. Strategic benefits such as innovation and branding are acknowledged but not as strongly emphasized. Contrarily, the findings of Lincoln (2025) assert that while SMEs agreed that it was important for businesses to behave sustainably, they were not convinced that protecting the environment should be given priority.

Table 6: Importance of CE Adoption

Benefit	Mean	Standard Deviation	Percentage (%)	Ranking
Saving cost on materials	3.36	1.44	29	2
Reducing environmental harm	3.47	1.36	31	1
Improving brand reputation	3.07	1.17	15	3
Gaining access to green funding	2.78	1.30	12	4

Table 6 shows that respondents ranked reducing environmental harm (mean = 3.47) as the most important benefit motivating CE adoption, followed by saving cost on materials (mean = 3.36). Improving brand reputation (mean = 3.07) and access to green funding (mean = 2.78) were rated as less important.

This finding suggests that SMEs are driven primarily by environmental responsibility and financial considerations. Cost reduction and environmental benefits carry more weight than reputational gains or access to specialized funding opportunities. The results imply that awareness campaigns and policy interventions promoting CE should emphasize both its economic efficiency and environmental value, as these are the strongest motivating factors for SMEs in Awka. This is consistent with Adesua-Lincoln (2025), who found cost savings and environmental protection to be among the primary drivers for CE adoption in Nigerian SMEs, and with Akanji et al. (2023), who highlight resource efficiency and environmental responsibility over reputational gains.

4 Conclusion

This study concludes that challenges such as a lack of government incentives, financial constraints, limited technical knowledge, and weak awareness continue to slow the progress of CE adoption by SMEs in the study area. At the same time, cost savings and environmental concerns are powerful motivators for businesses, suggesting that CE adoption can grow rapidly if these benefits are clearly demonstrated and supported. Based on the findings and conclusions, the following recommendations, which are practical and directly linked to findings and realistic for the Nigerian context, are made:

i. Awareness and Education: There should be targeted awareness campaigns and training workshops to deepen SMEs' understanding of CE principles. Business associations and local government agencies can collaborate to provide regular seminars and mentorship programs.
ii. Policy and Government Support: The government should introduce incentives such as tax rebates, grants, and subsidies for SMEs adopting CE practices. Stronger policies and enforcement of sustainable waste management laws are also needed to create an enabling environment.
iii. Financial Assistance: Access to affordable credit and green financing schemes should be expanded to help SMEs invest in CE-related infrastructure and technologies. Financial institutions should be encouraged to create special loan products for sustainable business practices.
iv. Integration of CE into Business Policy: SMEs should be encouraged to develop formal sustainability plans or CE policies. This will help move CE from informal activities into a structured business strategy.

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