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ARTICLE

Strategies for Adoption of Circular Economy in the Nigeria Construction Industry

***Abdullahi Idris*[1], *Abdulkabir Opeyemi Bello*[1,2*]**

[1] *Department of Building, Federal University of Technology, Minna, 920101, Nigeria*
[2] *Dollahills Research Lab, Dollasoft Technologies, Lagos State, 101283, Nigeria*

ABSTRACT

The concept of circular economy has gained recognition as a way to manage waste and conserve resources sustainably, and has the potential to transform the construction industry. This is particularly relevant in the construction industry due to the significant amounts of waste generated during the construction and demolition process. This study examines the perceived importance and effectiveness of strategies related to the circular economy in the construction industry. The data were collected through a survey administered to professionals in the construction sector, capturing their perceptions of various strategies. The results reveal that most strategies received high mean ratings, indicating their perceived significance. Strategies such as waste management and recycling facilities, design for disassembly, and prioritising the use of renewable and sustainable materials were highly valued by the respondents. Additionally, statistical analyses confirmed the significance of these strategies. However, some strategies received comparatively lower ratings, suggesting the need for further attention and improvement. The findings have important implications for policymakers, industry professionals, and stakeholders, guiding decision-making and resource allocation. By prioritising and implementing the identified strategies, stakeholders can drive the adoption of circular economy principles, enhance resource efficiency, and reduce waste in construction practices. Furthermore, this study lays the foundation for future research, highlighting the importance of exploring barriers to implementation, understanding synergies and trade-offs among strategies, conducting longitudinal studies to assess long-term impact, and broadening the participant pool for a more comprehensive understanding. Overall, this study contributes to the growing body of knowledge on the circular economy in the construction industry and provides valuable insights for promoting sustainability and circularity within the sector.

Keywords: Circular economy; Construction industry; Strategies; Resource efficiency; Sustainability

*CORRESPONDING AUTHOR:
Abdulkabir Opeyemi Bello, Department of Building, Federal University of Technology, Minna, 920101, Nigeria; Dollahills Research Lab, Dollasoft Technologies, Lagos State, 101283, Nigeria; Email: abdulkabiropeyemi@gmail.com

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1. Introduction

Like other industries around the world, the construction industry is experiencing a paradigm shift due to demographic, digital, and economic factors, which has prompted the building industry to implement initiatives to reduce its environmental impact [1]. Buildings and construction consume the most energy (36%) and emit the most carbon (37%) globally [2], posing a significant challenge to the Architecture, Engineering, and Construction (AEC) industry in terms of sustainability and resource efficiency [3]. Furthermore, in 2020, the average daily construction waste generated was 3,418 tonnes, accounting for 23% of all waste deposited in landfills [4]. If correctly managed, construction and demolition waste (CDW) can be a significant source of cash [5]. Implementing the circular economy (CE) is a modern and practical strategy to achieve sustainability in the construction industry through waste management and resource conservation [6].

As defined by the Ellen MacArthur Foundation [7], CE is intended to retain the highest level of utility and value for goods, components, and materials at all times, distinguishing between technical and biological cycles. The Ellen MacArthur Foundation embraced the notion of CE in 2015, and this definition has been used as a basis for further definitions by other scholars. CE is still growing in terms of development and impact [8], and there is no standard definition for CE due to its interdisciplinary nature [9]. CE is seen as a sustainable growth approach since it allows for separating resource usage and economic growth, promoting long-term development [10]. Implementing CE is considered a critical option for fulfilling the world's resource, energy, and climate mitigation goals, particularly the SDGs for 2030 [11].

Since the introduction of CE, studies have demonstrated that CE techniques are ecologically beneficial and have resulted in reduced waste, particularly in the manufacturing sector, where it was first advocated [12-15]. Ensuring that the construction industry reaps the benefits of implementing CE policies [16]. Adopting CE methods can benefit the construction industry by increasing productivity and addressing the drawbacks of the traditional linear construction methodology [7]. In contrast to the linear construction method, primarily concerned with project completion, the CE idea considers the End of Life (EOL) phase of all building activities [17]. As pioneering work by Geissdoerfer et al. [18] demonstrated, CE is a "cradle to cradle" strategy as opposed to the "cradle to grave" linear approach usually applied in the worldwide construction business.

Despite the compelling need for the construction industry to implement CE to reduce waste and save resources, it confronts several problems, including industry fragmentation, a lack of collaboration, and industry opposition to change. The slow adoption of CE in the construction industry, according to Charef et al. [19] can be linked to the sector's complexity. To overcome the barriers to the CE, a wide range of stakeholders across the value chain must adapt their practises [20]. According to Munaro et al. [21], there is a pressing need and demand in the construction industry to transition from the existing linear paradigm to a more sustainable one, with an emphasis on implementing the CE strategy to ensure a more ecologically responsible construction industry.

In recent years, a plethora of CE measures have been proposed in the literature at all levels of the CE system [22]. However, most of these metrics lack standard theoretical or methodological foundations and exhibit variations in content and form Svarc et al. [23]. As a result, there are no standard measurements for CE, making comparison difficult and leading to confusion about the level of circularity performance [23]. Despite this, studies are scarce focusing on indicator-based frameworks (integrated systems of indicators) capable of capturing numerous aspects of the CE transition [24].

Although the policy has several implicit notions about the future of CE, there has been little research into what a circular lot would look like Pinyol et al. [25]. Bauwens et al. [26] provide a framework of four hypothetical circular future scenarios. However, research on how these scenarios can form in practice is lacking [25]. CE initiatives at universities are scattered and unintegrated, and there is no framework to bring them together for a more significant impact [27]. Furthermore, there is no link between higher education performance and societal sustainability [28]. More study is needed to test the suggested theoretical policy framework against the techniques used by policymakers from different regions to reduce the gap between policy development and implementation [29].

A comprehensive strategy has the potential to effectively surmount the limitations encountered in Circular Economy (CE) implementation within the construction industry. By integrating various elements such as innovative design principles, advanced material selection, streamlined waste management processes, and stakeholder collaboration, this strategy can holistically address the multifaceted challenges of CE adoption. Through careful consideration of product life cycles, from procurement to end-of-life, and the incorporation of circular practices like modular construction, materials reuse, and recycling, the strategy fosters a more sustainable and resource-efficient construction ecosystem.

According to the literature, CE implementation in the construction industry is still in its early phases, necessitating a more effective and comprehensive approach to improving waste and resource conservation. Based on the problems and limitations in CE implementation in the construction industry, this research intends to develop a comprehensive strategy for adopting CE in the Nigerian construction industry. The study set the following objectives to; develop effective strategies for the adoption of CE in the Nigerian construction industry, and determine the impacts of the identified strategies.

2. Literature review

2.1 Overview of linear economy

The most crucial part of creating a zero-waste city is transitioning from a linear economic model to a CE [30]. According to World Economic Forum research published in 2019, only 9% of the global economy runs in a circular method, which means that only 9% of waste is reused or recycled into new ones [31]. The remaining 91% of the economy operates linearly, with waste produced due to production and consumption [32]. There is an urgent need to lessen the environmental impact of the existing linear production and consumption system [33], which uses a lot of materials and generates a lot of waste and emissions. As the global economy expands, worldwide waste generation is expected to rise by up to 70% by 2050 [34]. Because the current consumption and production systems are unsustainable, a new economic model is required [20], and the CE has been advocated as a solution by entrepreneurs, policymakers, and researchers [33].

In the construction sector, the linear economy is a production and consumption model that follows a "take, make, use, and dispose of" method. This model involves extracting and processing raw materials into products, which are subsequently utilised and eventually discarded as waste. This linear paradigm, typified by non-collaborative work practises, has traditionally been followed by the construction industry, resulting in a lack of linkages across industrial sectors, supply chain members, and partners in implementing sustainable practices.

2.2 Concept of circular economy in the construction industry

The origins of the CE can be traced back to various intellectual schools, such as Industrial Ecology and Cradle to Cradle [35]. The CE aims to build a sustainable economic system by minimising waste, energy losses, and resource consumption by narrowing, delaying, and closing the resource cycle [18,36]. The CE is viewed as a solution to problems such as waste generation, resource scarcity, and the need for economic rewards [37].

The CE is seen as a broad concept that incorporates several measures targeted at reducing, reusing, recycling, and recovering economic resources [10,36,38,39]. The phrase "circular economy" was coined by Pearce et al. [40], who promoted sustainable economic development (SED) and emphasised the relationship between the economy and the environment. This contrasted with the linear economic paradigm founded on cost-benefit concepts [41].

The CE's fundamental premise is to shift away from linear "take-make-dispose" economic paradigms and focus on completing the materials and energy loops to keep the value of resources in the economy [40]. However, it was not until 2015 that the CE gained popularity because the Ellen MacArthur Foundation promoted its use. Ghisellini et al. [42] defined the CE principles as decreasing waste, lowering pollution, prolonging the life of products and materials, and renewing natural systems. Similarly, CE is defined by Geissdoerfer et al. [18] as a system in which resource inputs and waste, emissions, and energy loss are minimised by slowing, closing, and shrinking material and energy cycles.

The CE concepts are summarised in the 10 Rs, which are as follows: R0 Refuse, R1 Rethink, R2 Reduce, R3 Reuse, R4 Repair, R5 Refurbish, R6 Remanufacture, R7 Repurpose, R8 Recover, and R9 Recycle [43-45]. It has been proposed that applying these concepts to the construction industry might aid in developing a CE [46]. According to Mendoza et al. [47], CE attempts to shorten resource cycles by implementing eco-efficient solutions that lower the number of resources utilised and the environmental effect per unit of product or service. Slowing down resource cycles entails increasing the usage of items to increase their worth over time, whereas closing resource cycles allows upcycling to restore or produce new value from spent resources [36]. Implementing the circular economy in the construction industry can reduce waste, conserve resources, and create a more sustainable future.

2.3 Application of circular economy in the construction industry

Most European Union countries have met the Waste Framework Directive's 2020 target of 70% recovery of construction and demolition waste (CDW). Still, these high recovery rates are primarily achieved through backfilling, in which valuable materials are crushed and used for road construction. Suppose there is an increase in reuse and enhanced recycling. In that case, there is an excellent opportunity for the environment and resources, resulting in a higher economic value from CDW. On the other hand, the circularity gap in the construction and demolition industry is compounded by the extended lifespan of structures and infrastructure, resulting in a delay between input and output.

Although there is significant potential for the development of a CE in the construction and demolition industry, technological, regulatory, and behavioural constraints must be addressed before this potential can be fulfilled. According to Mahpour's [48] literature analysis, the most significant technical hurdle to implementing the CE in the construction industry is a lack of experience, which leads to a lack of effective processes, making circular activities more complicated and time-consuming. Aguilar-Hernandez et al. [49] assessed the circularity gap in 43 countries. They discovered a low level of circularity, proposing interventions to close the material loop of nations, such as improved waste management systems, closed supply chains, increased resource efficiency, and extended product lifetimes.

Hopff et al. [50] developed a framework to understand the various aspects and scales of campus operations and how to implement circular principles in campus development, another study discussed the benefits and challenges of implementing the circular economy framework in a national cross-sectoral policy programme. Despite its narrow focus on the campus, the paradigm [50] developed went beyond simply examining R-strategies implementation.

Guzzo et al. [51] detailed techniques for R-strategies implementation and emphasised the significance of examining many viewpoints (conceptual, strategic, and practical) to reconcile circular innovation's theoretical and practical components. A CE implementation plan based on legislation and policy, enabling infrastructure, public awareness, collaborative business models, product design, supply chain, and information and communication technologies was proposed by Lieder & Rashid [37]. Prendeville et al. [52] developed a matrix connecting circular city concepts (such as "regenerate", "share", and "optimise") with various solutions based on the ReSOLVE framework [53]. Superti et al. [54] stressed the importance of numerous actors in the CE, such as the government, start-up incubators, and researchers, in addition to those directly involved in producing, using, or recycling products. Pinheiro et al. [55] provided a similar integrative approach. They emphasised the critical role of various stakeholders (customers, government, and legislation) in advancing CE. According to Bacova et al. [56], regional administrations play a critical role in boosting CE implementation by setting framework conditions or by helping local and regional actors. The concept of policy dispersion is inadequate, and the impact of location and cultural context on the adoption of global policies could be investigated using the domestication framework's procedures [57]. It has also been shown that transformative learning is essential in Education for Sustainable Development (ESD) [58]. For example, the Ellen MacArthur Foundation's CE100 Annual Summit brings together commercial enterprises, students, and universities [59]. The UK Government and the European Union provide financing programmes to assist universities and businesses in collaborating to create circular economy technologies [60].

3. Methodology

In research, numerous approaches are utilised, including quantitative, qualitative, and mixed methods (which integrate quantitative and qualitative methodologies). This approach is supported by the evidence of Saunders et al. [61] and Cresswell [62]. According to Kothari [63] and Saunders et al. [61], the quantitative research method is distinguished by a deductive-objective-generalising approach. In contrast, an inductive-subjective-contextual viewpoint indicates the qualitative method. Furthermore, the quantitative method is concerned with numerical data.

In contrast, the qualitative methodology concerns interpreting observation or interview data. This study adopts the quantitative approach using a survey (questionnaire) to collect responses from the respondents. This approach allows respondents to provide answers based on their level of agreement or disagreement. Further, due to the geographical difference between the professionals, a survey approach is best suited, easy to reach and cost-effective. The population consists of Architects, Builders, Engineers, and Quantity surveyors. These professionals are best suited to provide adequate responses due to their contribution and essentiality in the construction industry. The professionals were asked to select from amongst the developed strategies. These strategies were developed through an adequate review of the literature and preliminary findings by the authors.

The developed questionnaire is designed based on a 5-Likert scale to assess the respondents' views on the developed strategies. The data were distributed randomly and virtually using Google Forms. This approach is considered adequate and easy to reach. The population includes construction workers such as architects, builders, engineers, and quantity surveyors. A total number of 164 responses were received and considered for analysis. Using Microsoft Excel and SPSS V26, the data were analysed using descriptive and inference statistics. Results were presented in a table for clear and meaningful presentation and discussion. The analysis included Cronbach alpha, mean ranking, one sample t-test, and one-way ANOVA (Kruskal Wallis).

4. Presentation and discussion of the result

4.1 Characteristics of respondents

Table 1 shows the highest academic qualification; most participants (64.63%) held a bachelor's degree, 22.56% with a master's degree, and 12.80% with a doctorate. This demonstrates a diverse educational background among the respondents. When examining their professions, the study attracted professionals from various fields within the construction industry. Engineers represented the largest group, accounting for 41.46% of the respondents, followed by builders (32.32%), architects (15.85%), and quantity surveyors (10.37%). This diverse professional representation suggests a well-rounded perspective on the subject matter. The years of experience among the participants were also varied, with the largest group (43.90%) having 6-10 years of experience, followed by 25.00% with 11-15 years of experience. The distribution of experience across the different categories indicates a balanced representation of participants at different career stages.

Table 1. Respondent's characteristics.

Respondent's characteristics		Frequency	Percentage
Highest academic qualification	Bachelor degree	106	64.63
	Master's degree	37	22.56
	Doctorate Degree	21	12.80
	Total	**164**	**100.00**
Profession	Architect	26	15.85
	Builder	53	32.32
	Engineer	68	41.46
	Quantity Surveyor	17	10.37
	Total	**164**	**100.00**
Years of experience	0-5	19	11.59
	6-10 years	72	43.90
	11-15 years	41	25.00
	16-20 years	23	14.02
	20 years above	9	5.49
	Total	**164**	**100.00**
Knowledge of circular economy	Yes	42	25.61
	No	99	60.37
	Maybe	23	14.02
	Total	**164**	**100.00**

Interestingly, regarding knowledge of the circular economy, only 25.61% of the respondents indicated knowing this concept. In comparison, the majority (60.37%) did not possess this knowledge, and 14.02% were unsure. These findings suggest that there may be a need for further education and awareness-building regarding the circular economy within the construction industry. Overall, these characteristics of the respondents provide valuable context for interpreting the study's findings and highlight the need for targeted efforts to promote awareness and understanding of the circular economy principles among professionals in the field.

4.2 Reliability

The reliability statistics for the study indicate a high level of internal consistency among the items measured, as shown in **Table 2**. Cronbach's alpha coefficient, a commonly used measure of internal consistency, was calculated to be 0.906. This coefficient ranges from 0 to 1, with higher values indicating greater internal consistency. In this case, the coefficient of 0.906 suggests a strong level of reliability within the data set. The study consists of 23 items that were included in the analysis. These items collectively contribute to the overall measurement of the construct under investigation. With a large number of items and a high Cronbach's alpha coefficient, it can be inferred that the items are highly correlated and measure the intended construct consistently.

Table 2. Reliability test.

Cronbach's alpha	N of items
0.906	23

4.3 Mean ranking of the developed strategies

Table 3 presents a comprehensive overview of the mean ratings and significance levels for various strategies related to the circular economy in the construction industry. Analysing the top 8 strategies with the highest mean ratings, it is evident that the respondents highly valued these strategies. Strategies such as developing waste management and recycling facilities (Mean: 4.34), designing for disassembly (Mean: 4.32), and prioritise the use of renewable and sustainable materials (Mean: 4.30) received exceptionally high mean ratings, indicating their perceived importance and effectiveness in promoting circular economy practices. The low significance levels for these strategies further confirm their statistical significance, solidifying their significance in the respondents' perception. On the other hand, the last five strategies with relatively lower mean ratings were still considered somewhat important, albeit to a lesser extent. Encouraging the development of new business models (Mean: 3.26) received the lowest mean rating among all the strategies while still sur-

Table 3. Mean ranking of the strategies.

Strategies	Mean	SD	S-K	K-S	Test value = 3.5			R
					t	df	Sig	
Develop waste management and recycling facilities	4.34	0.771	–1.000	0.453	13.978	163	0.000	1
Design for disassembly	4.32	0.734	–1.063	1.230	14.358	163	0.000	2
Prioritise the use of renewable and sustainable materials	4.30	0.657	–0.404	–0.732	15.570	163	0.000	3
Implement systems to recover and recycle construction materials	4.29	0.758	–0.876	0.386	13.298	163	0.000	4
Redesign products to be more durable	4.26	0.835	–1.038	0.546	11.686	163	0.000	5
Develop financial instruments and incentives that support circular economy	4.26	0.723	–0.825	0.696	13.389	163	0.000	6
Proper demolition and deconstruction planning	4.22	0.727	–0.751	0.537	12.678	163	0.000	7
Adopts off-site construction techniques	4.21	0.581	–0.052	–0.318	15.601	163	0.000	8
Design buildings to maximise resources and minimising waste	4.14	0.782	–0.563	–0.278	10.480	163	0.000	9
Optimise resource use through efficient processes	4.13	0.684	–0.517	0.461	11.755	163	0.000	10
Introduce reverse logistics	4.12	0.569	0.013	0.010	13.857	163	0.000	11
Develop processes for remanufacturing products	4.10	0.841	–0.700	–0.085	9.194	163	0.000	12
Invest in technologies and infrastructure	4.09	0.713	–1.360	4.922	10.518	163	0.000	13
Encourage collaboration and partnerships	4.08	0.709	–0.741	1.107	10.461	163	0.000	14
Integrate eco-design principles into product development	4.07	0.705	–0.741	1.149	10.405	163	0.000	15
Increase education and awareness	4.06	0.707	–0.087	–0.978	10.167	163	0.000	16
Develop and promote circular design guidelines	3.90	0.838	–0.130	–0.930	6.151	163	0.000	17
Encourage product longevity through maintenance	3.90	0.764	0.178	–1.263	6.640	163	0.000	18
Encourage product and material traceability	3.87	0.693	–0.719	1.066	6.872	163	0.000	19
Provision of financial incentives and regulations	3.74	0.788	0.184	–0.840	3.963	163	0.000	20
Incorporate circular economy criteria into procurement processes	3.62	1.132	–0.664	–0.130	1.311	163	0.192	21
Establish efficient systems for the collection, sorting, and reprocessing	3.39	1.048	–0.450	–0.403	–1.341	163	0.182	22
Encourage the development of new business models	3.26	1.025	–0.152	–0.514	–3.047	163	0.003	23

passing the benchmark. These lower-rated strategies still demonstrated statistical significance, suggesting they are perceived as significant to a certain degree. Overall, these findings provide valuable insights into the highly valued and considered essential strategies for advancing circular economy principles in the construction sector, as well as the areas that could benefit from further attention and improvement.

4.4 Chi-square and Kruskal Wallis (one way ANOVA)

Table 4 presents the results of chi-square tests and Kruskal-Wallis tests conducted for the construction industry's different strategies related to the circular economy. The chi-square test evaluates the association between the strategies and the variables. In

Table 4. Chi-Square and Kruskal Wallis.

Strategies	Chi-square	df	Asymp. Sig.	Kruskal-Wallis H	df	Asymp. sig.
Design for disassembly	106.683[a]	3	0.000	2.593	4	0.628
Implement systems to recover and recycle construction materials	90.390[a]	3	0.000	2.732	4	0.604
Prioritise the use of renewable and sustainable materials	38.207[b]	2	0.000	2.781	4	0.595
Design buildings to maximise resources and minimising waste	70.390[a]	3	0.000	2.926	4	0.570
Adopts off-site construction techniques	72.049[b]	2	0.000	6.775	4	0.148
Proper demolition and deconstruction planning	98.195[a]	3	0.000	6.143	4	0.189
Encourage collaboration and partnerships	126.000[a]	3	0.000	3.441	4	0.487
Encourage product and material traceability	146.390[a]	3	0.000	8.775	4	0.067
Increase education and awareness	21.415[b]	2	0.000	3.323	4	0.505
Develop waste management and recycling facilities	96.098[a]	3	0.000	6.731	4	0.151
Introduce reverse logistics	84.305[b]	2	0.000	1.699	4	0.791
Provision of Financial incentives and regulations	62.780[a]	3	0.000	4.968	4	0.291
Develop and promote circular design guidelines	46.244[a]	3	0.000	2.440	4	0.655
Redesign products to be more durable	82.293[a]	3	0.000	5.084	4	0.279
Optimise resource use through efficient processes	115.366[a]	3	0.000	2.557	4	0.634
Encourage product longevity through maintenance	6.817[b]	2	0.033	4.002	4	0.406
Invest in technologies and infrastructure	146.098[a]	3	0.000	3.611	4	0.461
Develop financial instruments and incentives that support circular economy	101.024[a]	3	0.000	7.275	4	0.122
Integrate eco-design principles into product development	128.829[a]	3	0.000	3.376	4	0.497
Develop processes for remanufacturing products	61.902[a]	3	0.000	8.080	4	0.089
Incorporate circular economy criteria into procurement processes	50.146[c]	4	0.000	31.703	4	0.528
Establish efficient systems for the collection, sorting, and reprocessing	62.585[c]	4	0.000	77.744	4	0.172
Encourage the development of new business models	55.024[c]	4	0.000	163.000	4	0.361

contrast, the Kruskal-Wallis test compares the mean ranks of the strategies across different groups. The results show the test statistics, degrees of freedom (df), and the associated significance levels.

Analysing the chi-square test results, several strategies demonstrate a statistically significant association with the variables. For instance, strategies such as "Design for disassembly" (Chi-Square = 106.683, df = 3, p = 0.000), "Implement systems to recover and recycle construction materials" (Chi-Square = 90.390, df = 3, p = 0.000), and "Proper demolition and deconstruction planning" (Chi-Square = 98.195, df = 3, p = 0.000) show significant associations. This suggests that the perception of these strategies differs significantly across different groups.

Similarly, the Kruskal-Wallis test results indicate significant differences in mean ranks for various strategies. Strategies such as "Adopts off-site construction techniques" (H = 6.775, df = 4, p = 0.148), "Encourage product and material traceability" (H = 8.775, df = 4, p = 0.067), and "Develop and promote circular design guidelines" (H = 8.080, df = 4, p = 0.089) exhibit relatively higher p-values, indicating a lack of statistically significant differences in mean ranks across different groups.

On the other hand, the strategies "Encourage the development of new business models" (H = 163.000, df = 4, p = 0.361) and "Establish efficient systems for the collection, sorting, and reprocessing" (H = 77.744, df = 4, p = 0.172) show higher test statistics and p-values, suggesting no significant differences in mean ranks among the strategies across different groups.

In summary, the results of the chi-square and

Kruskal-Wallis tests indicate significant associations and differences in mean ranks for several strategies related to the circular economy in the construction industry. These findings highlight the variations in perceptions and rankings of strategies among different groups, providing valuable insights for understanding the significance and effectiveness of these strategies in promoting circular economy practices within the industry. Since the respondents have similar opinions on the developed strategies, this could make the process of developing policies on CE easy and effective.

5. Conclusions

In conclusion, this study has examined the perceived importance and effectiveness of various strategies related to the circular economy in the construction industry. The findings indicate that most strategies were perceived as essential and effective, with high mean ratings and statistical significance. The respondents particularly valued strategies such as waste management and recycling facilities, design for disassembly, and prioritising the use of renewable and sustainable materials. However, some strategies received comparatively lower ratings, indicating the need for further attention and improvement in their implementation.

The theoretical implication of this study lies in the concept of CE, emphasizing the shift from a linear "take-make-dispose" model to one that prioritizes resource efficiency, reduced waste, and sustainable practices. This study acknowledges the potential benefits of adopting circular economy principles in the construction industry, such as minimizing material waste, extending product lifecycles, and lowering environmental impacts. The practical implications of this research encompass the identification of context-specific strategies, policy recommendations, and stakeholder engagement methods that can facilitate the implementation of circular economy practices in Nigeria's construction sector. These insights can guide industry stakeholders, policymakers, and businesses towards fostering sustainable growth, reducing environmental burdens, and enhancing resource management within the construction industry. Further, the outcome of this study can further be implemented in other developing countries with similar characteristics as Nigeria.

The implications of this study are significant for policymakers, industry professionals, and stakeholders involved in the construction industry. The identified strategies can guide decision-making and resource allocation, enabling stakeholders to focus on the strategies highly valued and recognised by industry professionals. By prioritising these strategies, stakeholders can drive the adoption of circular economy principles, enhance resource efficiency, and reduce waste in construction practices. Furthermore, this study provides a foundation for future research in the field of circular economy in the construction industry. First, further investigation is needed to understand the barriers and challenges associated with implementing the identified strategies. Identifying and addressing these barriers will be crucial in facilitating the successful adoption and implementation of circular economy practices.

Future studies could explore the potential synergies and trade-offs between different strategies. Understanding the interdependencies and interactions among the strategies can provide valuable insights into the holistic implementation of circular economy principles in the construction industry. This will allow stakeholders to optimise their efforts and resources, ensuring a more integrated and practical approach to circularity. Longitudinal studies are warranted to assess the long-term impact of these strategies on key performance indicators, such as waste reduction, resource efficiency, and overall sustainability in the construction sector. By monitoring and evaluating the outcomes of the implemented strategies over time, stakeholders can gain a deeper understanding of their effectiveness and make informed decisions for continuous improvement. Lastly, future research could expand the scope of the study by including a broader range of participants from different regions and backgrounds. This would enhance the generalizability of the findings and provide a more comprehensive understanding of the perceptions and priorities related to the circular economy in the construction industry.

Authors Contribution

Abdullahi Idris—*Conceptualisation and Writing.*

Abdulkabir Opeyemi Bello—*Writing and Analysis.*

Conflict of Interest

There is no conflict of interest.

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