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# Exploring Awareness, Perceptions, and Attitudes of Professionals Towards Circular Economy in the Zambian Construction Industry

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***Abstract :*** *The construction industry's traditional linear model of extraction, use, and disposal has contributed significantly to environmental degradation, prompting a global shift toward circular economy (CE) practices. CE emphasizes reducing, reusing, recycling, and recovering materials to promote sustainability across the full lifecycle of construction activities. While CE is gaining momentum worldwide, its adoption in developing countries such as Zambia remains limited. This study explores the awareness, perceptions, and attitudes of Zambian construction professionals toward CE principles. Using a quantitative online survey, data was collected from 34 professionals and analyzed with descriptive statistics. Results show a moderate level of CE awareness, with 58.8% reporting at least a basic understanding of CE practices. Respondents recognized strong environmental benefits and demonstrated a generally positive attitude toward CE adoption. The study recommends strengthening stakeholder awareness, improving regulatory frameworks, expanding training opportunities, offering financial incentives, and equipping mid-career professionals to lead CE initiatives within the Zambian construction sector.*

***Keywords -*** *Awareness, Perceptions, Attitudes, Circular Economy, Zambian Construction Industry*

## I. INTRODUCTION

World population growth has led to increased demand and subsequent strain on natural resources. The relationship between population growth and resource consumption is further exacerbated by urbanization and industrialization, which have led to unsustainable patterns of resource use and environmental degradation. The traditional linear economic model of extraction–production–use–disposal, has been used to meet the needs of human life at the expense of the environment [1,2].

Offering a significant departure from the traditional linear economic model of extraction–production–use–disposal, the concept of circular economy (CE) has gained prominence as a transformative framework in the pursuit of sustainable development, [3]. CE advocates for a regenerative system where resources are continuously reused, recycled, and retained within the economy, thereby minimizing waste and reducing environmental impact. By adopting CE practices, it is anticipated that the global consumption of natural resources could be reduced by 53% by 2050, marking a substantial shift towards resource efficiency [4]. According to a study by Rosário et al. [5] the extensive adoption of circular CE practices across the U.S. business sector is anticipated to significantly enhance economic growth, with projections suggesting a potential contribution of up to $4.5 trillion to the nation's Gross Domestic Product (GDP) by 2030. This demonstrates the environmental and economic benefits of transitioning to a circular economy.

The construction industry is often regarded as conservative and less innovative compared to other sectors. In contrast, the adoption of Industry 4.0 digital technologies, such as the Internet of Things (IoT) and artificial intelligence (AI), within the manufacturing industry has been pivotal in advancing sustainable practices, optimizing resource utilization, and enhancing efficiency, thereby easing the transition to CE models [6]. Despite its significant potential for recycling and its status as one of the largest consumers of natural resources, as well as a major contributor to global waste and carbon emissions, the construction industry continues to be predominantly rooted in linear practices [7,8] According to Aljaber et al. [9] implementing CE practices in the construction

industry is challenging due to factors like low interest and knowledge, limited awareness, cost issues, regulatory barriers, and a lack of standardized practices and guidelines for project teams.

Zambia, as a developing country, is experiencing rapid urbanization, owing to a significant migration of people from rural areas to urban centers. This demographic shift causes a steady increase in the urban population, raising the demand for residential and commercial living spaces. In the context of CE in the construction industry, this trend emphasizes the critical need for sustainable building practices to accommodate the growing population without depleting natural resources. Several scholars have extensively reviewed the CE practices adopted in the construction industry. Since 2016, there has been a steep increase in research output on the CE within the construction industry, accounting for approximately 21% annually across the globe [10]. Contrary to the global academic growth, the knowledge and awareness of circular economy principles is limited among professionals in developing countries [11]. Mhlanga et al. [12] attributed the low awareness level (approximately 1.6%) to scant research output from Africa despite the boom in building construction. To date, to the knowledge of the researcher, no studies have exclusively looked at the awareness, perceptions, and attitudes of stakeholders towards the application of CE principles in the Zambian construction industry.

This study will provide valuable insights into the current state of awareness, perceptions, and attitudes of professionals in Zambia's construction sector. It will help fill the gap in existing literature by focusing on a developing country's context, where CE adoption may face unique challenges due to economic, regulatory, and technological factors. Furthermore, by understanding the current knowledge base and mindset of industry professionals, policymakers can develop targeted interventions, such as training programs, incentive schemes, and policy reforms, to encourage the transition to sustainable construction methods. Additionally, the research can identify barriers hindering the adoption of circular economy, leading to the development of strategies to overcome these challenges.

## II. LITERATURE REVIEW

The concept of CE emerged in the 1960s, when it was introduced by environmental economists who highlighted the unsustainability of the prevailing open-ended economic model and advocated for a system that "closes the loop" to ensure the longevity of resources and human life on Earth [13]. CE is grounded in various theoretical frameworks, drawing from environmental economics, industrial ecology, and ecological economics [14], as well as the 'cradle-to-cradle' philosophy, which emphasizes designing products with their entire lifecycle in mind, from creation to reuse [15].

Various definitions of CE have emerged from multiple interconnected schools of thought, all sharing core principles such as the elimination of waste and the maximization of material value [16] In the context of buildings, CE is defines as "*A building that is developed, used, and reused without unnecessary resource depletion, environmental pollution and ecosystem degradation. It is constructed in an economically responsible way and contributes to the well-being of people and the biosphere. Here and there, now, and later. Technical elements are demountable and reusable, and biological elements can also be brought back into the biological cycle"* [17].

A study by Lee et al. [1] revealed that the CE concept can be distinguished into three levels: the micro-level, the meso-level, and the macro-level. The macro-level refers to the city, while the micro-level relates to building materials and the meso-level refers to buildings [18]. In terms of CE participants in the construction industry, the micro-level refers to the employees of construction companies who are responsible for the execution of CE, the meso-level refers to the cooperative operation of CE by different industrial practitioners, the macro-level refers to an industrial policy or legal makers who establish the development goal of CE [1,19]. The micro-level is the foundation of the industry, and the attitudes and actions of the participants are more likely to affect CE development [20].

### 2.1 benefits of CE in the construction industry

The World Green Building Council identifies CE as a key innovation for steering the built environment toward sustainable development, offering significant environmental, economic, and social benefits [21]. Environmentally, CE focuses on minimizing waste and pollution by curbing the consumption of natural resources and reducing carbon emissions, thereby safeguarding the natural environment [22]. Research indicates that CE can significantly lower CO2 emissions by 63%, while also achieving reductions in water usage (53%) and fossil resource consumption (48%) compared to traditional linear models [23]

Economically, by encouraging the continuous use of materials, CE can significantly reduce costs related to raw material procurement and waste disposal [24]. The shift towards CE fosters advancements in building materials, design strategies, and waste management technologies, which in turn create new employment opportunities and economic prospects [25]. Additionally, by decreasing reliance on finite resources and volatile global supply chains, CE enhances long-term resource security for construction firms, leading to financial savings and stability [26]. Case studies further illustrate that CE implementation can result in lower lifecycle costs and improved project outcomes, reinforcing the economic viability of sustainable construction practices [27].

Socially, the adoption of CE principles in the construction industry has significant positive implications for public health and community well-being. By reducing pollution from material production and waste disposal, CE practices contribute to cleaner air and water, which in turn lead to better public health outcomes. Additionally, CE supports the adaptive reuse of culturally significant buildings, helping preserve heritage while strengthening community identity and continuity [28]. Furthermore, the preservation of such buildings through CE practices can stimulate local economies by attracting tourism and promoting local craftsmanship, thereby enhancing social cohesion and economic resilience.

**2.2. awareness of CE in the construction industry**

Several studies have extensively examined the adoption and diffusion of CE practices within the construction industry [12]. The majority of these studies originated from European nations, indicating an increasing awareness and commitment to sustainability within the region. Despite this global growing academic interest, a systematic review by Akhimien et al. [29] revealed that awareness of CE concepts in Africa remains notably low. The review pointed out that the limited awareness is largely due to the sparse research output from the continent, which accounts for only about 1.6% of global CE-related publications.

A study by Kirchherr et al. [30] highlighted that there are 114 definitions of the concept of CE. This shows that CE still lacks a universally accepted definition. Lack of clear and unified understanding of CE is one of the factors that hinder the awareness of CE principles among construction professionals. This factor can lead to confusion and varying interpretations of its principles and practical application in construction.

A further impediment to the awareness of CE principles in the construction industry is the intricate nature of applying these principles, compounded by insufficient knowledge and expertise among professionals [31]. Implementing CE requires a comprehensive systemic shift that spans multiple stages of a building's lifecycle, including design, material procurement, demolition, and waste management [32]. This inherent complexity can make it difficult for professionals to fully comprehend the scope and impact of CE practices.

The insufficient incorporation of CE principles into educational curricula is a significant barrier to raising awareness among construction professionals, as noted by [33]. Their study revealed that CE principles are often underemphasized in formal education and training programs within the construction field, resulting in a gap in the necessary knowledge and skills among emerging professionals. Giuseppina et al. [34] found that construction professionals lack education on CE principles, limiting their understanding of sustainable practices and their ability to implement CE effectively.

**2.3 perceptions and attitudes towards CE**

It is undeniable that CE is a concept with substantial business potential and meaningful contributions to sustainability [35]. Many construction professionals acknowledge the industry's significant environmental impact and view CE as a critical step toward achieving sustainability [36]. For example, a study by Zoufa et al. [38] on the factors influencing the adoption of CE principles in Nigerian construction found that professionals generally perceive CE positively, recognizing the value of practices like reusing, repairing, and recycling materials.

However, despite the recognized benefits of CE, perceptions among construction professionals regarding sustainable practices vary widely [38]. A common misconception is that CE practices—such as using recycled materials, investing in equipment, or designing for disassembly—raise upfront project costs, making them seem financially unattractive despite their substantial long-term economic benefits [39]. Additionally, when market demand and incentives from clients or governments are weak, professionals have little economic motivation to prioritize CE, slowing its adoption despite its clear potential to reduce environmental impact and support long-term sustainability [33].

**2.4 Similar studies**

There has been a significant growth in the number of CE studies in the construction sector since 2017 that have yielded varying results regarding the extent of CE awareness and practices among construction industry professionals [40]. For instance, Adams et al. [39] investigated the current awareness, challenges, and enablers of CE in the UK construction sector. They identified limited awareness, interest, and knowledge as significant challenges. Similarly, Guerra and Leite [33] provided an overview of the awareness, major challenges, and enablers of CE among stakeholders in the United States construction industry.

In Africa, a few studies on the awareness levels of CE principles and practices have been carried out mostly in Ghana, Nigeria, and South Africa [41] A study conducted by Amudjie et al. [42] assessed the awareness and implementation of CE principles among built environment professionals in Ghana by imploring a structured questionnaire survey as a data collection instrument. The research revealed that these professionals had a moderate understanding of the six CE principles examined: repair, recycle, reuse, renewable energy usage, reduce, and redesign. However, the findings also indicated that only two of these principles, specifically repair and reuse, were practiced to a moderate extent by the professionals.

Dadzoe et al. [43] conducted research using a structured questionnaire issued to construction professionals and demand-side operators. The results showed that construction professionals in Ghana show higher awareness of green building construction compared to demand-side operators, indicating a knowledge-attitude gap towards circular economy practices in the African construction industry.

A study by Idris and Bello [44] on the strategies for adoption of CE in the Nigeria construction industry highlighted that professionals recognize the importance of strategies such as waste management and recycling, indicating a positive perception of CE's potential impact. The study highlights high awareness levels of CE in the Nigeria construction industry, emphasizing strategies like waste management, design for disassembly, and sustainable material use. Another study by Adekunle et al [45] identified the lack of education and awareness is a significant barrier to CE adoption in the South African construction industry, highlighting a critical need for improved knowledge dissemination.

A few studies in Zambia have investigated sustainability awareness, drivers, barriers, and practices within the country's construction industry [46,47]. Additionally, one research has explored the awareness, attitudes, and perceptions of green building practices and principles [48]. However, as far as the author is aware, no studies have specifically examined the awareness, attitudes, and perceptions of the circular economy (CE) concept within Zambia's construction industry.

## III. METHODOLOGY

This study employed an online questionnaire survey design to collect data from professionals in the Zambian construction industry, using Google Forms to distribute structured and standardized questions efficiently. The online format was chosen for its ability to gather a large volume of data from a geographically dispersed population in a cost-effective and time-efficient manner, allowing easy access and participation without the need for in-person interactions. A quantitative research approach was adopted, focusing on the numerical and statistical analysis of responses. This approach utilized descriptive statistical techniques and the Relative Importance Index (RII) ranking method to provide objective insights into CE awareness, attitudes, and perceptions among Zambian professionals. The data collection instrument was an online questionnaire distributed via email, featuring closed-ended, Likert-scale questions to quantify respondents' awareness, perceptions, and attitudes toward CE practices. These responses were then statistically analyzed to achieve the study's research objectives.

The target population included professionals from various sectors of the Zambian construction industry, such engineers, contractors, project managers, and technicians involved in construction-related activities. These professionals are best suited to provide adequate responses due to their contribution and essentiality in the construction industry. The study included professionals who are currently working in Zambia's construction sector, with some academic qualification, and have relevant knowledge or experience in construction projects. A total of 315 potential respondents (from the Zambian National Council for Construction and the Association of Consulting Engineers of Zambia) were contacted.

## IV. RESULTS AND DISCUSSION

### 4.1 Participants' demographic background

Table 1. demographic information

| Item | Demographics | % |
|---|---|---|
| | *Professional Role* | |
| | Engineer | 76.5 |
| 1 | Contractor | 14.7 |
| | Project Manager | 8.8 |
| | *Highest Level of Academic Qualifications* | |
| | Certificate | 2.9 |
| | Diploma | 2.9 |
| 2 | Bachelor's degree | 38.2 |
| | Master's degree | 50.0 |
| | Doctorate | 5.9 |
| | *Number of years of experience in the construction industry* | |
| | Less than 5 years | 20.6 |
| 3 | 5-10 years | 41.2 |
| | 11-15 years | 20.6 |
| | More than 15 years | 17.6 |

A total of 34 responses was collected from professionals working in the Zambian construction sector. The respondents included 26 individuals working as engineers representing 76.5% of the participants, 5 working as contractors or with construction company, representing 14.7% of the total participants, and 3 working as project managers accounting for 8.8% of the total responses.

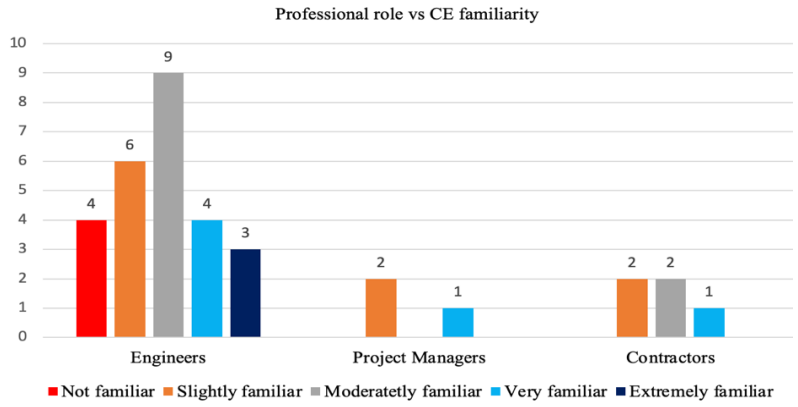


Figure 1. The awareness of CE concept among different construction professionals

From Fig. 1 above, 15.4% of engineers stated that they were not at all familiar with the concept of CE, while 23.1% were slightly familiar, 34.6% were moderately familiar, 15.4% were very familiar, and 12.5% were extremely familiar. 2 out of the 3 project managers that participated in the survey declared that they were slightly familiar, and 1 declared to be very familiar. For contractors, 2 of the 5 contractors stated that they were slightly familiar, while another 2 stated that they were moderately familiar. Only 1 of the 5 contractors declared to be very familiar with CE in general.

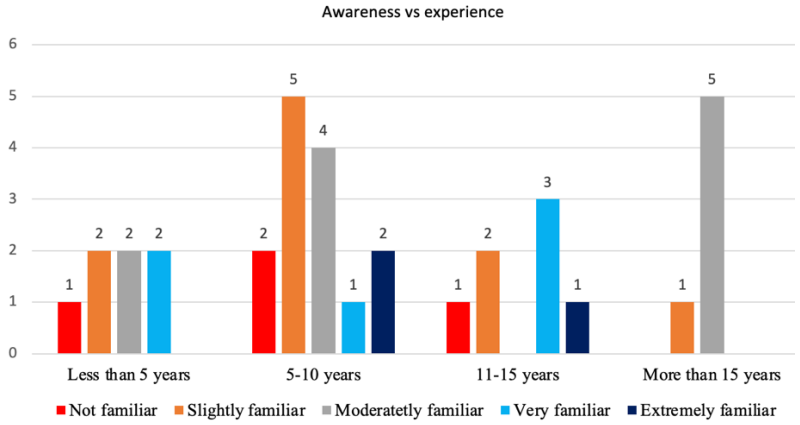


Figure 2. Awareness – Years of experience

As shown in Fig. 2, awareness of CE principles varied by experience level: newer professionals showed mixed familiarity, mid-career professionals reported growing confidence, and those with 11–15 years had the highest familiarity. However, participants with over 15 years of experience were mostly only moderately familiar, with none reporting very high familiarity.

Table 2. Ranking of the perceived benefits associated with CE.

| Item | RII | Ranking | IL | [1] | [2] | [3] | [4] | [5] |
|---|---|---|---|---|---|---|---|---|
| The Circular Economy can significantly reduce construction waste and enhance material efficiency. | 0.876 | 1 | H | 0 | 2 | 2 | 11 | 19 |
| Circular Economy practices help reduce the depletion of natural resources by promoting resource circularity and reuse. | 0.853 | 2 | H | 0 | 1 | 6 | 10 | 17 |
| Implementing Circular Economy practices leads to long-term cost savings in construction projects. | 0.824 | 3 | H | 1 | 0 | 8 | 10 | 15 |
| Circular Economy principles are key to achieving sustainability and reducing environmental impact in construction. | 0.818 | 4 | H | 0 | 2 | 5 | 15 | 12 |
| Circular Economy practices promote innovation and drive new technological advancements in construction. | 0.794 | 5 | H-M | 1 | 1 | 8 | 12 | 12 |
| BIM and digital technologies are crucial enablers of Circular Economy practices in construction. | 0.776 | 6 | H-M | 0 | 2 | 8 | 16 | 8 |
| Circular Economy strategies can help mitigate the negative environmental impact of rapid urbanization and infrastructure expansion. | 0.771 | 7 | H-M | 1 | 2 | 9 | 11 | 11 |
| Circular Economy approaches improve the lifecycle management of buildings, leading to increased building longevity. | 0.724 | 8 | H-M | 1 | 4 | 9 | 13 | 7 |
| Adopting Circular Economy practices improves the reputation and competitiveness of construction companies. | 0.688 | 9 | H-M | 1 | 6 | 11 | 9 | 7 |

The highest-rated benefit, with a Relative Importance Index (RII) of 0.876, was the perception that CE could

The aim of this section of the study was to understand the participants' perceptions about the benefits and challenges that they associate CE with. Table 2 presents the Relative Importance Index (RII) ranking of perceived benefits associated with CE practices in construction, providing a clear insight into the participants' perspectives on the advantages of CE adoption. Participant were asked to select they perception on 5-point Likert scale where 1= Strongly disagree, 2=Disagree, 3=Neutral, 4= Agree, and 5= Strongly agree.

The respondents' perceptions of CE benefits reveal a strong consensus on its potential positive impacts in the construction industry. 3 of the top 4 High-ranked benefits highlight the environmental impact of adopting CE in the construction industry. The top-ranked benefit (which states that CE can reduce construction waste and enhance material efficiency) highlights how the participants' perceived benefits of CE align with the core tenet of CE. This is supported by strong agreement, with 30 out of 34 respondents either agreeing or strongly agreeing.

Following closely, with an RII of 0.853, is the understanding that CE practices help reduce the depletion of natural resources through resource circularity and reuse. This aligns with the fundamental goals of CE, which aim to close material loops and reduce dependence on virgin resources and minimizing waster [39]. Among the respondents, 27 individuals expressed agreement or strong agreement with this benefit, reflecting an emphasis on CE principles in construction in addressing resource scarcity and promoting sustainability. The second highest ranked perceived benefit is closely related to the first one as they both highlight the environmental benefits of CE principles in the construction industry. While the first benefit focuses on the reduction of construction waste and improvement in material efficiency, the second ranked benefit extends this idea by emphasizing that CE practices support resource conservation through circularity and reuse. When materials are used efficiently and construction waste is minimized, fewer new resources are needed, thus slowing down resource depletion. Together, these benefits reflect a comprehensive approach in CE where reducing waste goes hand-in-hand with sustaining natural resources, ultimately contributing to a more sustainable construction industry that prioritizes both resource efficiency and environmental preservation.

However, while there is strong agreement on the environmental benefits of CE, cost-related and long-term economic benefits are slightly lower, suggesting that the financial incentives are less understood or prioritized. For example, the idea that CE can improve company reputation and competitiveness ranked the lowest with an RII of 0.688. This relatively lower ranking suggests that while CE is valued for its environmental and operational benefits, its impact on reputation might not be as immediately apparent to industry professionals. This could indicate a need for further awareness of the long-term strategic benefits of CE, including innovation, sustainability, and competitiveness.

Table 3. RII ranking of the perceived challenges associated with CE adoption.

| Item | RII | Ranking | IL | [1] | [2] | [3] | [4] | [5] |
|---|---|---|---|---|---|---|---|---|
| Clients and stakeholders are not yet fully aware of the benefits of Circular Economy practices, limiting demand. | 0.818 | 1 | H | 2 | 1 | 4 | 12 | 15 |
| The current regulatory environment does not adequately support the adoption of CE practices. | 0.800 | 2 | H | 2 | 0 | 7 | 12 | 13 |
| There is insufficient knowledge and training available to effectively implement CE practices. | 0.782 | 3 | H-M | 2 | 1 | 7 | 12 | 12 |
| The construction industry lacks the technological infrastructure to support large-scale adoption of CE principles. | 0.700 | 4 | H-M | 4 | 3 | 6 | 14 | 7 |
| The upfront costs of transitioning to CE practices are prohibitively high for many companies. | 0.688 | 5 | H-M | 2 | 1 | 15 | 12 | 4 |
| There is a perception that transitioning to CE practices will slow down project timelines. | 0.629 | 6 | H-M | 5 | 2 | 13 | 11 | 3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Using recycled and reused materials could potentially compromise the structural integrity or quality of buildings. | 0.588 | 7 | M | 6 | 5 | 12 | 7 | 4 |
| CE practices are more suited to large-scale projects but may be challenging for small-scale ones. | 0.524 | 8 | M | 8 | 10 | 6 | 7 | 3 |

Table 3 ranks the perceived challenges associated with the adoption of CE practices in the construction industry. The respondents' perceptions of barriers to CE adoption highlight significant challenges that could impede widespread implementation in the Zambian construction industry. The top-ranked challenge is the lack of awareness among clients and stakeholders about the benefits of CE practices. This suggests that insufficient demand from the market is a major hurdle, as clients (who are considered as key decision-makers) may not see the value in adopting CE principles. Without greater awareness or client demand, CE initiatives may struggle to gain traction, even if professionals are aware of their benefits.

The second most critical challenge is the lack of regulatory support, indicating that the current policy environment does not sufficiently incentivize or enforce the adoption of CE practices. This reflects a common issue in emerging markets, where regulations often lag behind global sustainability trends. Without strong policy frameworks or incentives, companies may be reluctant to invest in CE, even if they recognize its long-term advantages.

Knowledge gaps and insufficient training rank third, highlighting the need for capacity building within the industry. Even if companies are willing to adopt CE, a lack of expertise can hinder effective implementation. This also aligns with the fourth challenge: the lack of technological infrastructure, which is crucial for large-scale adoption of CE principles such as recycling, resource efficiency, and material tracking.

Upfront costs are a common perceived significant barrier [17,33]. Although CE can lead to long-term savings, the initial investment in new technologies, processes, and training can be prohibitive for many firms. Additionally, the perception that CE will slow project timelines suggests that efficiency concerns are a deterrent, as professionals in the construction industry tend to prioritize meeting tight deadlines over implementing new, potentially disruptive practices.

Lower-ranked challenges such as concerns about structural integrity when using recycled materials and the perceived difficulty of applying CE to small-scale projects further emphasize the complexity of adopting CE in a traditional and conservative industry like construction.

In summary, the implications of these perceived barriers suggest that significant work is needed to raise awareness, develop supportive regulatory frameworks, provide adequate training, and address cost concerns. Only by overcoming these challenges can CE practices become more widely adopted in the Zambian construction industry.

Table 4. RII ranking of the likelihood of implementing CE practices.

| Experience | RII | Ranking | Very Unlikely | Unlikely | Neutral | Likely | Very likely |
|---|---|---|---|---|---|---|---|
| Less than 5 years | 0.829 | 2 | 0 | 0 | 1 | 4 | 2 |
| 5-10 years | 0.800 | 3 | 0 | 0 | 4 | 6 | 4 |
| 11-15 years | 0.857 | 1 | 0 | 0 | 1 | 3 | 3 |
| More than 15 years | 0.767 | 4 | 0 | 1 | 1 | 2 | 2 |

Participants involved in the study, with varying levels of experience, exhibit a generally positive attitude towards the adoption of CE practices in the Zambian construction industry. The RII rankings show that professionals with 11-15 years of experience are the most likely to adopt CE practices (RII = 0.857), followed by those with less than 5 years of experience (RII = 0.829). Professionals with 5-10 years of experience rank third (RII = 0.800), while those with over 15 years rank the lowest (RII = 0.767). These results suggest that mid-career professionals, particularly those with 11-15 years of experience, are more open to CE adoption, possibly due to a combination of industry knowledge and an openness to innovation.

The attitudes revealed by this study are crucial for understanding the potential rate of CE adoption in Zambia. The strong positive attitudes among mid-career professionals suggest that this group could play a pivotal role in

accelerating the adoption of CE practices. Their experience and openness to innovation make them ideal candidates for leadership in implementing CE initiatives, influencing peers and organizations to adopt more sustainable practices. Their likely involvement in key decision-making roles within construction projects further strengthens their capacity to influence the adoption rate.

However, the lower likelihood of adoption among professionals with more than 15 years of experience could slow the overall adoption rate. This group often holds senior leadership positions, and their reluctance to embrace CE practices could create barriers within organizations, especially in terms of decision-making and strategic direction. If these more experienced professionals resist CE, it could limit the influence of more enthusiastic mid-career and younger professionals, potentially creating a bottleneck for widespread adoption.

## V. CONCLUSION

The concept of CE as an enabler of sustainable development has gained traction in the construction industry. Despite this global growing academic interest, the awareness of CE practices in Africa remains notably low due to the sparse research output from the continent. The aim of this study was to explore the awareness levels, perceptions, and attitudes of professionals towards the adoption of CE in the Zambian construction industry.

The findings reveal a moderate level of awareness of CE principles among construction professionals, with 58.8% of participants reporting at least moderate familiarity with CE practices. Despite this, the relatively low implementation rate of CE principles in actual projects (32.4%) suggests that awareness alone is not sufficient to drive adoption. Several barriers were identified, including a lack of stakeholder awareness, inadequate regulatory support, insufficient training, and high upfront costs, all of which inhibit the widespread implementation of CE practices.

Mid-career professionals, particularly those with 11-15 years of experience, were found to be more open to adopting CE practices, while those with more than 15 years of experience were more resistant. This suggests that younger and mid-career professionals could serve as catalysts for change, but their influence may be limited by the reluctance of senior leadership to embrace CE principles. The study highlights the need for targeted interventions to address the challenges and close the gap between awareness and implementation.

Future research could build on this study by exploring several key areas. More detailed investigation into Zambia-specific cultural, economic, and regulatory barriers would help identify targeted solutions for CE adoption. Longitudinal studies could track how awareness and implementation evolve over time, while research focused on clients and stakeholders would clarify what drives demand for CE practices. Another valuable area is the integration of digital technologies such as BIM, including assessing current digital capacity and training needs. Case studies of successful CE projects in Zambia or similar contexts could offer practical guidance for overcoming challenges. Research exploring the role of public-private partnerships, and the integration of CE principles into educational curricula would also support broader and more sustainable adoption.

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