

CHALLENGES OF CIRCULAR SUPPLY CHAINS IN DEVELOPING COUNTRIES: THE EXAMPLE OF ZAMBIA

Mwanza B.G.¹, Magwenzi A.¹, Nanthakorn B.², Banomyong R.²

¹ *University of Zambia, Graduate School of Business, Zambia*

² *Thammasat University, Thammasat Business School, Thailand*

ABSTRACT

Purpose: In a global approach to reduce the use of natural resources, international conventions, protocols, and agreements were introduced. In implementing these international approaches, developing countries were facing challenges such as war, instability, and economic weakness. As a result, introducing sustainable strategies, such as circular supply chains, remain relatively immature compared to more developed regions. This paper explores the challenges in the implementation of circular supply chains in developing countries and investigates these challenges using the example of Zambia, a developing African country.

Design/methodology/approach: In the first phase, a literature review was conducted to evaluate, critique, and synthesize the challenges of circular supply chains in developing countries. The literature review covered research articles, reviews, and concept papers from the research databases Scopus, and Science Direct. Studies combining 'circular supply chain,' 'sustainable supply chains,' 'supply chains and circular economy,' and 'circular supply chains and challenges of implementation' and focussing on 'developing countries' were considered for review. In the second phase of this research, a comparative analysis was performed contrasting the findings in the implementation of circular supply chains in developing countries with today's circular supply chain strategies in Zambia in order to reflect implementation challenges.

Findings: This research maps challenges developing countries are facing in the implementation of circular supply chain strategies and demonstrates them using the example of Zambia. It provides recommendations to relevant groups of stakeholders both in the public and private sectors.

Research limitations: Performing a literature review limits findings to secondary sources, potentially influencing the timeliness of data in this fast-changing research area.

Practical implications: This research provides a basis for formulating policies and theoretical framework.

Originality/value: Circular supply chain strategies have been widely explored. This research provides additional insight into the status and specific challenges faced by developing countries in the implementation phase.

Keywords: Circular supply chains, Sustainability, Remanufacturing, Recycling, Developing countries, Zambia

1. Introduction

Natural resources are being consumed at a rapid rate worldwide. A key driver for the unsustainable consumption of raw materials is waste management, which includes generating non-segregated waste, disorganized recycling concepts, missing reuse strategies, inadequate waste treatments, and inappropriate final disposals in landfills (Mangla, et al., 2018). Resource recovery initiatives are set up to create and maintain circular strategies in order to solve these issues. A circular supply chain (CSC) involves a theoretically endless cycle of reuse, remanufacturing, and recycling after the phase of the initial product usage (Low, et al., 2016). A CSC is a component of the circular economy, which aims to implement concepts to make product usage more sustainable over the complete lifecycle of a product, for example by adding concepts of reusing and remanufacturing (Mangla, et al., 2018). CSC provides businesses with the chance to reuse resources that would otherwise be considered waste. Its goal is to convert used and worn-out products into new products. This is a new perspective differing from the traditional linear supply chains, which disposed the product after the period of usage (McCloud, 2023). Implementing CSC demands having an insight into the challenges impeding its development. Such challenges can be divided into governmental,

financial, technological, knowledge-related, managerial, legal, social, and marketing-related challenges (Saroha, et al., 2018). Due to limited institutional capacities, a lack of access to sufficient financial resources, and a lack of technological innovation, these difficulties are often of higher relevance in developing countries than in developed countries (Wellesley, et al., 2019). According to Dora et al (2016), implementing CSC models is challenging and requires an understanding of the barriers.

Researchers and practitioners have addressed the challenges connected with CSCs (Genovese, et al., 2017; Millettea, et al., 2019; Bhatia, et al., 2022). Several studies have attempted to look at the challenges of CSC in developing countries (Okafor, et al., 2020; Ahmed, et al., 2022; Sohal, et al., 2022; Yadav, et al., 2023). It has been observed that the challenges of CSC implementation particularly in developing countries require to be distinguished accurately (Mangla, et al., 2018), as there is still limited research that has attempted to bring together the various studies focusing on this matter. To address this gap, this research explores the challenges developing countries are facing when implementing CSCs. Moreover, it aims to identify country-specific challenges in the example of the developing country Zambia. To achieve this, this research is exploring the following two research questions:

1. What challenges do developing countries face when implementing CSCs?
2. How do the challenges of implementing CSC in Zambia relate to those in other developing countries?

To answer these research questions, this paper provides the applied methods in Section 2. Section 3 reviews the literature on challenges in the implementation of CSCs in developing countries. In Section 4 the country-specific challenges for Zambia are explored. Section 5 discusses the findings before a conclusion is provided in Section 6.

2. Methodology

The literature review was chosen as the research method for this study, and it was conducted between May 2023 and July 2023. A literature review is used as a research method to describe research trends and understandings on a particular topic. Tranfield, et al. (2003) state in their research that a literature review can systematically collect and synthesize previous studies. It can provide a solid basis for developing theory and enhancing knowledge. (Webster & Watson, 2002). For example, a study by Sharma, et al (2019) used a literature review approach to identify the CSC-related challenges in the food supply chains. Mangla (2018) used a literature review approach to establish the barriers to effective CSC management in developing economies. Moreover, Khan & Haleem (2021) investigated circular economy activities in emerging economies using a literature review methodology. Further, Orji, et al (2022) established determinants of CSC implementation in manufacturing industries from Nigeria using a literature review approach. This study applies the literature review approach to establish the CSC challenges by considering Zambia as an example.

To effectively conduct the literature review, a five-step approach was performed (Figure 1). Step one involved the search for articles by using research databases such as Elsevier, Science Direct, Springer, Emerald Insight, Wiley, Scopus, and Taylor & Francis. The search for published articles was limited to abstracts, keywords, and titles in the area of CSC management. Emphasis was made to include articles on CSC management and implementation challenges in developing economies in which Zambia was considered. The following keywords were used; "circular supply chains", "challenges", "implementation", "developing economies", and "Zambia" and a total of 208 articles were identified and considered.

In step two, the articles were analyzed to filter duplicates as well as to consider only the articles meeting the focused area of research. As a result of this, 96 articles were chosen. At this stage, 112 articles did not meet the criteria and were not considered for abstract analysis.

In step three, abstract analysis was conducted to ensure that all articles that included the keywords and key phrases, "circular supply chains", "challenges", "implementation", "developing economies", and "Zambia"

were considered for full-text analysis. Articles that did not have the keywords and key phrases in the abstracts were eventually excluded and 36 articles were chosen to undergo a full-text analysis. In step four, full-text reading was conducted on the 36 articles, and research questions were developed during this phase. The structure of the literature review and its analysis were based on the previously defined research questions.

In step five, an analysis of the articles was conducted to establish the challenges of implementing CSCs in developing economies and Zambia. To present the challenges of circular supply chain implementation from developing countries' perspective and Zambia's perspective as per the research questions, the articles were categorized into two groups, 'those focusing on developing countries' circular supply challenges' and 'those focusing on Zambia.' To present a comprehensive analysis of the challenges, a subsection for each challenge was scrutinized relative to the reviewed articles.

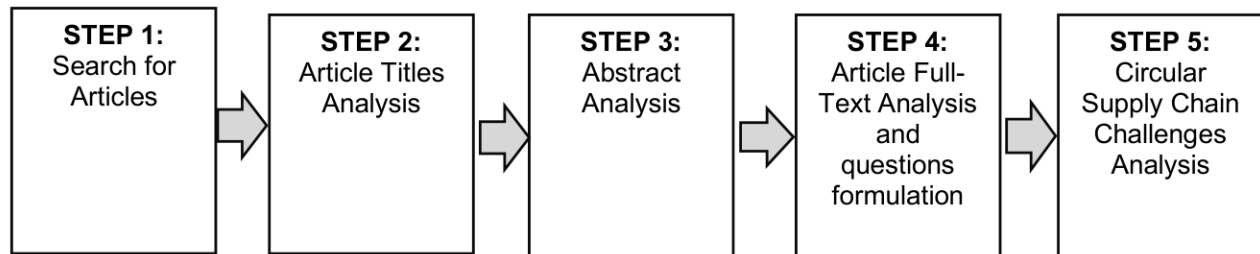


Figure 1: Research Design

3. Circular Supply Chain Challenges in Developing Countries

According to Saroha, et al. (2018), the challenges of CSCs in developing countries can be divided into governmental, financial, technological, knowledge- or skill-related, managerial, regulatory framework, social, and marketing-related challenges. The qualities of each challenge are examined in the following sub-sections.

3.1 Government-Related Challenges in Developing Countries

Government challenges of a CSC in developing countries relate to the lack of vision, laws, and policies (Hull, et al., 2021; Yadav, et al., 2023; Karuppiyah, et al., 2021). A lack of government CSC vision presents a challenge in developing countries. Government vision on the CSC is required to boost participation and to develop and establish agreements with cooperating partners (Hull, et al., 2021). Similarly, the lack of strict government laws and policies represents an additional challenge to overcoming the challenge of implementing CSCs (Yadav, et al., 2023), as stringent laws regarding recycling and remanufacturing practices are ineffective (Karuppiyah, et al., 2021). Further, developing countries lack policies to enforce extended producer responsibility, taxes, and charges for waste disposal. This is leading to more environmental degradation, as producers are not held accountable for generating waste (Okafor, et al., 2020).

3.2 Financial-Related Challenges

The financial challenges of a CSC relate to the lack of funding (Karuppiyah, et al., 2021; Ngu, et al., 2020). A transition to a CSC requires investment in CSC projects. As a result, huge upfront financial resources are required (Karuppiyah, et al., 2021). This can be a serious blocking point for developing countries, as most companies in developing countries are small and medium-sized enterprises (SMEs) and therefore cannot afford to finance huge projects. Further, the limited cash flows make it difficult for SMEs to mobilize the

resources required to acquire circular economy technologies such as industrial symbiosis to improve resource efficiency (Sohal, et al., 2022; Cezarino, et al., 2021).

3.3 Technological-Related Challenges in Developing Countries

The technical challenges of CSC implementation in developing countries relate to the lack of technology and information sharing, (Yusop, et al., 2016; Millettea, et al., 2019). In developing countries, the majority of industries are not equipped with the latest technologies to enable a smooth transition to CSCs (Karuppiyah, et al., 2021; Ahmed, et al., 2022). Similarly, information sharing is also a challenge. For instance in India, CSCs lack information systems channels to coordinate members in complex supply chain processes (Mangla, et al., 2018). Further, developing have difficulties accessing specific information, tools, and standards from original equipment manufacturers in developed countries to help with CSC implementation in developing countries (Ngu, et al., 2020).

3.4 Knowledge-Related Challenges in Developing Countries

Knowledge-related challenges of CSCs in developing countries usually involve the lack of awareness and lack of skilled manpower (Hull, et al., 2021; Yadav, et al., 2023). In developing countries, most people are not well informed about CSCs. The majority of people are only aware of traditional waste management practices such as recycling and landfilling and lack knowledge of better circular economy practices such as prevention, reuse, and remanufacturing (Hull, et al., 2021; Yadav, et al., 2023). Further, most manufacturers are not conscious of CSC strategies (Karuppiyah, et al., 2021). Likewise, the lack of skilled manpower, such as specialist labor to manage CSC processes in remanufacturing, is a challenge for developing countries (Ngu, et al., 2020; Ahmed, et al., 2022).

3.5 Management-Related Challenges in Developing Countries

The management challenges of CSC implementation in developing countries relate to a lack of managerial commitment and CSC responsibilities (Mangla, et al., 2018; Silva & Morais, 2021). The absence of strict laws and policy guidelines for CSCs results in less commitment by the management of business organizations to promote CSCs (Hull, et al., 2021; Karuppiyah, et al., 2021). Equally, the lack of structured CSC management such as the absence of mechanisms for defining responsibilities for various segments involved in waste management, remains a management challenge of CSC implementation in developing countries (Silva & Morais, 2021). Thus, governments require private-sector commitment and support to actualize an agenda for CSCs. Mangla et al. (2018), observed that the concept of a CSC in developing countries is significantly aided by raising the acceptance of managers at all levels of the organization.

3.6 Regulatory Framework-Related Challenges in Developing Countries

The regulatory framework challenges of CSCs in developing countries relate to ineffective frameworks (Okafor, et al., 2020). The regulatory frameworks regulating, promoting, and monitoring the transition to CSCs in most developing countries are ineffective (Ahmed, et al., 2022; Okafor, et al., 2020). During the transition to CSCs, there are fundamental shifts in government regulations, business practices, and consumer behavior. In India for instance, the shift to cleaner energy and circular economy requires the presence of stringent environmental and regulatory frameworks. Compared to developed countries, India lacks a robust environmental regulatory framework for adopting circular supply models (Goya, et al., 2016).

3.7 Social-Related Challenges in Developing Countries

The social challenges of CSCs in developing countries relate to the negative perceptions of recycled, reused, and remanufactured products (Sharma, et al., 2016; Cezarino, et al., 2021). Customers have quality

concerns in respect of remanufactured products. This discourages companies to implement CSC principles (Sharma, et al., 2016). Similarly, Karuppiah et al. (2021), confirm also that a low consumer perception of products from circular business creates uncertain demand and reduces the manufacturers' motivation to implement CSC practices. Further, structural problems in developing countries such as water and energy supply present an additional challenge (Cezarino, et al., 2021).

3.8 Marketing-Related Challenges in Developing Countries

The marketing-related challenges of CSCs in developing countries relate to the creation of market and customer demand for circular products (Sohal, et al., 2022; Ngu, et al., 2020). Challenges, such as a lack of an established market for circular products, impede the implementation of CSCs in developing countries (Sharma, et al., 2016). Likewise, competition between new products and circular products affects the implementation of CSCs (Ngu, et al., 2020), as consumers often have a preference for the new products (Karuppiah, et al., 2021).

A summary of the challenges in the implementation of CSCs identified in this research is provided in Appendix A.

4. Circular Supply Chain Challenges in Zambia

Zambia, like other developing countries, faces challenges in the implementation of CSCs on the governmental, financial, technological, knowledge-related, managerial, regulatory framework, social, and market-related level (Banda, et al., 2023; Sichiweza, 2017; Mwanza & Mbohwa, 2019). The following subsections explore the specific challenges in the implementation of CSCs Zambia is facing.

4.1 Government-Related Challenges in Zambia

Concerning the government, studies such as Banda et al. (2023) reported a lack of investment incentives by the Zambian government on waste technologies that would support a circular economy. On the other hand, a lack of regulatory enforcement on waste management stands in the way of the creation of a CSC in Zambia. For example, research performed by Mwanza et al. (2016) summarizes the ineffectiveness of the Zambian government in enforcing already-existing environmental legislation on waste streams such as plastic waste. Similarly, Sakanyi and Kooma (2022) identify comparable issues traced back to a lack of legislative and administrative enforcement of environmental regulations. Banda et al. (2023) state that the inability of the Zambian government to sanction or convict lawbreakers abrogating waste management regulations is another obstacle that is hampering Zambia's path toward a CSC. Furthermore, ineffective enforcement of extended producer responsibility (EPR) to management control waste, is a government-related challenge Zambia is facing (Mwanza & Mbohwa, 2019).

4.2 Financial-Related Challenges in Zambia

Financial challenges are among the major challenges to CSC actualization in Zambia. For instance, Hambulo (2014), points out financial failures by municipalities to procure waste bins meant to facilitate the segregation of waste streams discouraging households' participation in waste management. Sichiweza (2017) observed a lack of funding for municipalities which causes them to be unable to adequately deliver waste management services to the public. The lack of funds to finance waste management projects hinders the implementation of a CSC in Zambia as observed by Sambo et al. (2020). A lack of financial resources has also been observed to impede innovative initiatives. For example, improvements in waste recovery projects, efficient solutions in waste management, and concepts to implement CSCs in Zambia (Gweme, et al., 2016).

4.3 Technological-Related Challenges in Zambia

The lack of technical expertise is a challenge in implementing CSCs in Zambia. For instance, Nalwamba (2022) describes that the level of technical training on the handling of electronic waste ("E-waste") in Zambia is not adequate. Demonstrating that communities in Zambia are not fully aware of the handling of E-waste.

A similar finding is made by Sichiweza (2017), who found a shortage of technically qualified staff in the management of solid waste. Insufficient technical skills in waste management have been highlighted as a key barrier to the actualization of CSCs in many developing countries (Ahmed et al., 2022; Yusop et al., 2016). In other studies, such as Mwanza and Mbohwa (2019), it has been concluded that Zambian businesses do not make use of the most up-to-date recycling technology to recycle plastic waste.

4.4 Knowledge–Related Challenges in Zambia

There is a noticeable lack of knowledge within CSCs in Zambia. Hambulo (2014) describes in his research focusing on the engagement of stakeholders in waste management, that education on environmental topics is insufficient in schools, which goes along with a lack of public awareness in communities. Sichiweza (2017) describes inefficient attempts of local authorities to educate households on correctly dealing with solid waste and meeting requirements to achieve a CSC. Madekivi (2017) concludes that Zambian people consist of a low understanding of the value of their waste and the need to separate waste. In addition, research conducted by Banda et al. (2023) and Sakanyi & Kooma (2022) mentions the lack of knowledge of CSC practices among the people in Zambia as a barrier to CSC implementation.

4.5 Management–Related Challenges in Zambia

The management-related challenges of CSC implementation are described by Gweme et al. (2016). They describe a low level of participation in CSC projects among senior managers of institutions tasked with environmental protection. Such managers lack the motivation to sustain and promote CSC initiatives in communities. Similarly, Banda et al. (2023) observed that waste management agencies in Zambia lack top management commitment towards waste control and management.

4.6 Framework–Related Challenges in Zambia

Framework-related challenges to CSC implementation in Zambia are mainly related to ineffective regulations. For example, Hambulo (2014) found that the regulations for the disposal of waste are lax and that violators are most often not subject to any kind of punishment for their illegal actions. In addition, Sichiweza (2017) verifies that there is no legislative framework to facilitate community involvement in managing waste. Likewise, Mwanza and Mbohwa (2017) found that the absence of laws on collecting and treating waste is a barrier to the development of CSC practices in Zambia. Further, Mwanza and Mbohwa (2019), observed that the Zambian government does not have sufficient laws or rules in place for the efficient handling of plastic waste.

4.7 Social–Related Challenges in Zambia

Social challenges of CSCs in Zambia, relate to the attitude and culture of people in Zambia and their perception towards circular supply chain principles. For instance, Sichiweza (2017), observed a poor attitude and culture among communities in Zambia towards waste reduction. Equally, Mwanza & Mbohwa (2019), observed similar challenges among local communities. For instance, a lack of participation by Zambian households in plastic recycling schemes has been identified. Sambo et al (2020) summarize that waste separation processes within Zambian communities are hardly existing.

4.8 Marketing–Related Challenges in Zambia

Market challenges have been described by researchers as a lack of customer demand for remanufactured and recycled products (Genovese, et al., 2017). In Zambia, there are not many marketing challenges associated with a CSC implementation. However, Mwanza & Mbohwa (2017), observed in their reverse logistics barriers study a weak demand for recycled resin products in Zambia. The lack of demand for recycled products hinders the development of a CSC in Zambia (Mwanza & Mbohwa, 2017).

A summary of the challenges of the circular economy in Zambia identified from the literature is provided in Appendix B.

5. Discussion

5.1 Challenges facing developing countries when implementing circular supply chains

From the literature, governments in developing countries lack the vision, rules, or policies necessary to enable CSCs. There is also a lack of enforcement on the part of governments on pre-existing rules and regulations regarding CSCs. This conclusion is related to the findings that Hull et al. (2021) and Sakanyi & Kooma (2022) arrived at, in which they found that the lack of support from the government was a barrier to the adoption of CSCs in developing countries. Further, due to a shortage of funds to finance CSC projects, developing countries are limited to successfully implementing CSCs. This inference is supported by the findings of Sohal et al. (2022), who pointed out that the majority of firms in developing nations are small to medium enterprises (SMEs), and as a consequence, they do not have the funds to engage in CSCs. In the same way, there is a significant shortage of technical know-how on the most recent technology, and information exchange is very limited. These challenges have been highlighted by Sichiweza (2017) and Mwanza and Mbohwa (2019), who also reported a lack of access to new circular economy technology, as well as information exchange and a lack of technical competence.

As a result from the low level of knowledge and awareness on CSC concepts, the majority of people in developing countries do not have in-depth knowledge of practices associated with CSCs, such as the reuse and remanufacturing of items. Madekivi's (2017) findings align with this finding since the author also observed knowledge gaps related to a lack of environmental education and CSC in developing countries. Additionally, management in public waste management institutions is less dedicated to supporting the implementation of CSCs. The unwillingness to assume additional responsibilities and the fear of financial burdens are the primary motivating factors behind the lack of commitment. This view is consistent with that made by Gweme et al. (2016), Banda et al. (2023), and Hull et al. (2021), who acknowledged the lack of managerial commitment among key environmental institutions in developing countries. The absence of regulatory frameworks to govern the adoption of CSCs is another barrier. This finding is corroborated by Sichiweza, (2017), who also highlighted the absence of regulatory frameworks to oversee the treatment of waste in Zambia. In addition, Ahmed et al. (2022) and Okafor et al. (2020) come to the same conclusion when they noted the absence of regulatory frameworks in developing countries to lead changes in law, company practices, and consumer behaviors when transitioning to a CSC.

Furthermore, people have unfavorable attitudes about recycled, reused, and remanufactured items socially owing to worries about the product's quality, and they have a low preference for products that fall into these categories. Likewise, people have a negative attitude and culture toward CSCs, which is a major barrier to their adoption. These findings are also disclosed by Karuppiyah, et al., (2021); Sambo, et al., (2020) in which similar people's perceptions of reusable and remanufactured products were observed by the authors in developing countries. Equally, in developing countries, there is a lack of consumer demand for reused or remanufactured products. The development and implementation of CSCs are hindered as a result of this. Further, the presence of new items in the market acts as a barrier to the implementation of CSCs in developing countries, as pointed out by Ngu et al.(2020); Sharma et al., (2016).

5.2 Circular Supply Chain Implementation Challenges in Zambia and Developing Countries

The lack of government support due to a lack of vision, laws, and policies is a challenge that exists in other developing countries (Hull, et al., 2021) while in Zambia laws and policies exist what lacks is government enforcement (Mwanza, et al., 2016). Insufficient funding for CSC projects is common in all developing countries including Zambia. This finding corresponds to Sohal, et al (2022) findings on the lack of financing CSC projects in developing countries and Sichiweza, (2017) findings which highlight financial failures by

municipalities in Zambia. Likewise, insufficient levels of knowledge of the latest technologies are common both in Zambia and in developing countries. This finding is affirmed by Yusop, et al., (2016) and Mwanza & Mbohwa (2019) findings in which technical challenges in Zambia and developing countries were spotted. The lack of awareness and education is another common implementation challenge facing Zambia and developing countries. In both cases, people are not fully informed and education on the CSC is limited (Yadav, et al., 2023; Ngu, et al., 2020; Madekivi, 2017). In Zambia and developing countries, top management commitment remains a common challenge to effectively implement CSCs. Gweme, et al., (2016) findings were analog to this research finding. In their study, the authors witnessed low participation and a lack of drive among senior managers in the public and private sectors to support CSC implementation in developing countries. Similarly, ineffective legal framework barriers are observable in Zambia and developing countries (Kazancoglu, et al., 2021)). Unlike developing countries, in Zambia, regulatory frameworks encouraging community engagement in waste management are also non-existence (Hambulo, 2014). Further, a contradiction in people's social behavior in Zambia and developing countries was observed. That is, people in Zambia have a poor attitude and culture towards CSCs while in developing countries, people usually have negative perceptions of reusable and remanufactured products. These findings align with Karuppiah, et al., (2021); Sambo, et al., (2020) research findings. However, the lack of market demand for reusable/remanufactured products is consistent in developing countries. Consumers prefer new products to reusable/remanufactured as a result demand is low in Zambia and developing countries.

Based on the above, the findings confirm that most of the CSC implementation challenges in Zambia relate to those in other developing countries. However, only a few specific challenges such as government, regulatory framework, and social challenges have been noted to be different and do not relate to those in other developing countries.

6. Conclusion

The implementation of CSCs in developing countries is critical to advance sustainability and environmental opportunities. This research aimed to explore and summarize the country-specific challenges of CSC implementation in the example of the developing country Zambia. To achieve this goal, a literature review of articles on CSC implementation were identified from online databases. The findings obtained from the targeted and reviewed articles, provided answers to the research questions. The challenges of CSC implementation facing developing countries with a specific focus on Zambia were noted and divided into different categories of challenges, such as governmental, financial, technological, knowledge-related, managerial, legal, social, and marketing-related challenges. Some challenges such as technology, knowledge, management, regulatory framework, and marketing were observed to relate to developing countries and Zambia. However, some specific challenges associated with the government, regulatory framework, and social challenges were different and do not relate to Zambia and developing countries.

Therefore, this research contributes to the existing knowledge of CSCs by bringing together existing literature on the challenges of CSC implementation and provides a structured analysis to enable a better understanding of the challenges of CSC implementation in developing countries. Further, based on the findings, the research recommends that governments in developing countries prioritize the implementation of current laws and regulations on CSCs. This is because CSCs are becoming more important. It is of the utmost importance that support be offered, not only in the form of commitment but also in the form of funding for CSCs. To enable the development of skills and a process of exchanging information within the phase of implementation, collaborative partnerships and technical training are required. People should also be

educated and made aware of the CSC, and leaders should establish CSC objectives as well as strategies within their organizations. Further, to facilitate the establishment of CSCs, governments should encourage the use of items that can be reused and remanufactured.

Despite the contribution provided by the research, it is still limited in some ways and offers future research with research avenues. Firstly, the study was carried out using a literature review of previous studies. Future research should consider conducting a survey or case study to facilitate an in-depth analysis of the research. Secondly, the research only involved secondary data. Future research should consider primary data to provide unique and original insights into the challenges. Lastly, the research used a single example approach of a developing country to compare the challenges of CSC implementation. Future research should consider a multiple-example approach of developing countries for better comparisons of country-specific challenges of CSC implementation.

References

- Ahmed, Z., Mahmud, S. & Acet, H., 2022. Circular economy model for developing countries: evidence from Bangladesh. *Heliyon*, Volume 8.
- Banda, K., Mwanaumo, E. M. & Mwanza, B. G., 2023. Circular Economy: An Antidote to Municipal Solid Waste Challenges in Zambia. In: *Recycling Strategy and Challenges Associated with Waste Management Towards Sustaining the World*. s.l.:Intech Open.
- Bhatia, M. S., Jakhar, S. K. & Dora, M., 2022. Analysis of Barriers to Closed-Loop Supply Chain: A Case of the Indian Automotive Industry. *IEEE Transaction on Engineering Management* , 69(5).
- Cesarino, L. O. et al., 2021. Diving into emerging economies bottleneck: Industry 4.0 and implications for circular economy. *Management Decision*, 59(8), pp. 1841-1862.
- Dora, M., Manjot , B. S. & Gallear, D., 2016. Supply chain in a circular economy: a multidimensional research agenda. 3rd International Conference on Green Supply Chain.
- Genovese, A., Adolf , A. A., Figueroa, A. & Koh, S. L., 2017. Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications. *Omega*, 66(PB), pp. 344-357.
- Goya, S., Esposito, M. & Kapoor, A., 2016. Circular economy business models in developing economies: Lessons from India on reduce, recycle, and reuse paradigms. *Thunderbird International Business Review*, pp. 720-739.
- Gweme, F., Maringe, H., Ngoyi, L. & Stam, G. v., 2016. E-Waste in Zimbabwe and Zambia. Chinhoyi, Zimbabwe, Conference: 1st Institute of Lifelong Learning and Development Studies International Research Conference, Chinhoyi University of Technology.
- Hambulo, C., 2014. Stakeholder Participation in Solid Waste Management in Selected Zambian Urban Primary Schools of Lusaka, Lusaka: University of Zambia.
- Hull, C. E., Millette, S. & Williams, E., 2021. Challenges and opportunities in building circular-economy incubators: Stakeholder perspectives in Trinidad and Tobago. *Journal of Cleaner Production*, Volume 296, pp. 1-12.
- Karuppiah, K. et al., 2021. Inhibitors to circular economy practices in the leather industry using an integrated approach: Implications for sustainable development goals in emerging economies. *Sustainable Production and Consumption*, Volume 27, p. 1554–1568.
- Kazancoglu, I., Sagnak, M., Mangla, S. . K. & Kazancoglu, Y., 2021. Circular economy and the policy: A framework for improving the corporate environmental management in supply chains. *Business Strategy and the Environment*, 30(1), pp. 590-608.

- Low, J. S. C., Tjandra, T., Lu, W. F. & Lee, H. M., 2016. daptation of the Product Structure-based Integrated Life cycle Analysis (PSILA) technique for carbon footprint modelling and analysis of closed-loop production systems. *Journal of Cleaner Production* , Volume 120, pp. 105-123.
- Madekivi, T., 2017. Effectiveness of Recycling Intiatives in the City of Lusaka Zambia-Case of Ng'ombe Compound , Turku and Salo: Turku University of Applied Sciences.
- Mangla, S. et al., 2018. Barriers to effective circular supply chain management in a developing country context. *Production Planning and Control.*, 29(6), pp. 551-569.
- McCloud, C., 2023. shippingsolutions.com. [Online] Available at: <https://www.shippingsolutions.com/blog/circular-supply-chains#:~:text=A%20circular%20supply%20chain%20offers,where%20manufacturers%20discar%20product%20waste.> [Accessed 7 August 2023].
- Millettea, S., Williamsa, E. & Hullb, E. C., 2019. Materials flow analysis in support of circular economy development: Plastics in Trinidad and Tobago. *Resources, Conservation & Recycling*, Volume 150, pp. 1-8.
- Mwanza, B. G. & Mbohwa, . C., 2017. Major Obstacles to Sustainability in the Plastic Industry. Stellenbosch, 14th Global Conference on Sustainable Manufacturing, GCSM 3-5 October 2016, Stellenbosch, South Africa.
- Mwanza, B. G. & Mbohwa, C., 2019. Reverse Logistics Barriers: A Case of Plastic Manufacturing Industries in Zambia. s.l., International Conference on Industrial Engineering and Engineering Management (IEEM).
- Mwanza, B. G. & Mbohwa, C., 2019. Technology and Plastic Recycling: Where are we in Zambia, Africa?. s.l., International Association for Management of Technology IAMOT 2019 - Managing Technology for Sustainable and Inclusive Growth Conference Proceedings.
- Mwanza, B. . G., Mbohwa, C. & Telukdarie, A., 2016. Reverse Logistics Framework for PET Bottles. s.l., Proceedings of the American Society for Engineering Management 2016 International Annual Conference.
- Nalwamba, D. S., 2022. The Electronic Waste Management Crisis - A Situation Analysis of Zambia, Lusaka: Research Square .
- Ngu, J. H., Lee, D. M. & Osman, M. S. B., 2020. Review on current challenges and future opportunities in Malaysia sustainable manufacturing: Remanufacturing industries. *Journal of Cleaner Production*, Volume 273, pp. 1-13.
- Nnorom, I. C. & Osibanjo, O., 2011. Overview of Prospects in Adopting Remanufacturing of End-of-Life Electronic Products in the Developing Countries. *International Journal of Innovation, Management and Technology*, 1(3), pp. 328-338.
- Okafor, C. et al., 2020. Implementation of circular economy principles in management of end-of-life tyres in a developing country (Nigeria). *AIMS Environmental Science*, 7(5), p. 406–433.
- Sakala, W. D. & Moyo, S., 2017. Solid Waste Recycling and Job Market in Zambia. *Sustainable Resources Management Journal*, 2(6), pp. 1-9.
- Sakanyi, G. & Kooma, E. . H., 2022. Challenges and Opportunities Associated with Solid Waste Management in Chililabombwe District, Zambia. *Texila International Journal of Public Health*, pp. 2520-3134.
- Sambo , J., Muchindu , M., Nyambe , S. & Yamauchi , T., 2020. Sustainable Solid Waste Management: An Assessment of Solid Waste Treatment in Lusaka, Zambia. *Sanitation Value Chain*, 4(2), pp. 39-50.
- Saroha, M., Garg, D. & Luthra, S., 2018. Key Issues and Challenges in Circular Supply Chain Management Implementation- A SystematicReview. *International Journal of Applied Engineering Research*, 13(9), pp. 91-104.

- Sharma, V., Garg, S. K. & Sharma, P., 2016. Identification of major drivers and roadblocks for remanufacturing in India. *Journal of Cleaner Production*, Volume 112, p. 1882e1892.
- Sichiweza, E., 2017. Participation of Households in Solid Waste Management and Circular Economy Towards Sustainability: A case study of Kabwe Town, Central Province of Zambia , Enschede: University of Twente.
- Silva, O. W. D. & Morais, D. C., 2021. Transitioning to a circular economy in developing countries: A collaborative approach for sharing responsibilities in solid waste management of a Brazilian craft brewery. *Journal of Cleaner Production*, 319(128703).
- Snyder, H., 2019. Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, Volume 104, pp. 333-339.
- Sohal, A., Nand, A. A., Goyal, P. & Bhattacharya, A., 2022. Developing a circular economy: An examination of SME's role in India. *Journal of Business Research*, Volume 142, pp. 435-447.
- Tranfield, D., Denyer, D. & Smart, P., 2003. Towards a methodology for developing evidence-informed management knowledge by means of systematic review.. *British Journal of Management*, Volume 14, pp. 207-222.
- Webster, J. & Watson, R. T., 2002. Analyzing the past to prepare for the future: Writing a literature review. *Management Information Systems Quarterly*, 26(3).Wellesley, L., Preston, F. & Lehne, J., 2019. Chathamhouse.org. [Online] Available at: <https://www.chathamhouse.org/2019/05/inclusive-circular-economy/2-challenges-scaling-circular-economy-developing-countries>[Accessed 1 June 2023].
- Yadav, H., Soni, U. & Kumar, G., 2023. Analysing challenges to smart waste management for a sustainable circular economy in developing countries: a fuzzy DEMATEL study. *Smart and Sustainable Built Environment*, 12(2), pp. 361-384.
- Yusop, N., Wahab, D. & Saibani, N., 2016. Realising the automotive remanufacturing roadmap in Malaysia: challenges and the way forward. *Journal of Cleaner Production*, Volume 112, pp. 1910-1919.