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An Integrated Circular Supply Chain Framework to Enhance Malaysian Business Performance

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Abstract: Businesses rely on supply chain management to suit the needs of global and multigenerational consumers. However, the current linear manufacturing and distribution supply chain strategy has been regarded as the source of dangerous waste generation, environmental deterioration, and the global warming phenomenon. In mitigating this issue, circular supply chain management, a practical integration model, is seen as the solution as it helps to reduce material flows and supply chain waste. Unfortunately, the fundamental mechanisms that can support its effective execution have not been comprehensively examined, hindering its complete incorporation into company strategy. Thus, to overcome this knowledge gap and improve organizational understanding, this study uses the systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) procedure to investigate the characteristics, enablers, and barriers of circular supply chain management. The study found five interconnected key structures: government, industry stakeholders, corporate management, end users, and financial institutions, all of which play important roles in the successful implementation of a circular supply chain strategy. As a result, close collaboration across the five identified stakeholders is essential to enable successful implementation. This study's objective is to the United Nations Sustainable Development Goals (SDGs) 8, 9, and 12, which aim to promote peace and prosperity for people and the planet both now and in the future.

Keywords: *supply chain management, circular supply chain, scoping reviews, PRISMA-ScR, UN-SDGs*

1. Introduction

In place of the unpredictable economic conditions, fierce rivalry in today's business world, and the effect of the COVID-19 pandemic aftermath, organizations are now becoming increasingly cautious when making decisions that could have an impact on their bottom line (Attinasi et al., 2022). These circumstances are further worsened by the rapid changes in consumer demands brought about by the current state of the marketplace due to the deficiency of raw materials. Therefore, to become more flexible, adaptive, and competitive, firms must reorganize their supply chain networks and strategies (Alshahrani & Salam, 2022). To tackle these challenges and the growing depletion of resources, scholars, decision-makers, and business leaders have advocated for the adoption of the circular economy agenda as a means of resolving this predicament (Howard et al., 2022). The implementation of Circular Supply Chain practices, an innovative supply chain structure that is part of the circular economy components is a workable solution to mitigating this problem. Its goal is to ease material flows and lower waste, and contamination generation across the whole supply chain network (Genovese et al., 2017). According to the Ellen MacArthur Foundation (2021), the objective of a circular supply chain is achieving zero waste which requires the integration of regenerative and restorative economic and commercial principles into the circular economy framework. Therefore, unlike the conventional paradigm of disposable goods, the used parts might undergo renovation or a total redesign to mimic the fresh condition of raw materials (Farooque et al., 2019). The integration of circular supply chain practices has operational and strategic benefits, as well as a huge potential for value creation in the economic, corporate, environmental, and societal realms (Jain et al., 2018). Circular supply chain integration is also predicted to enhance companies' attempts to contribute environmentally to the growth of a sustainable economy (Ayati et al., 2022).

Unfortunately, there is a notable dearth of empirical research about the circular supply chain practices adoption within the context of Malaysian businesses. Thus, it is imperative to understand the barrier and enabler underpinning the circular supply practices implementation to ensure its successful adoption, enabling Malaysian businesses to effectively embrace and implement its concept. Henceforth, an extensive empirical study especially within the academic literature on the best approaches to express circular supply chain management in corporate strategy is necessary. This study will conduct a systematic assessment of the current literature on the factors that influence the effective implementation of circular supply chains. Subsequently,

the identification of the factors hindering the expansion of circular supply chain practices will also help to provide critical knowledge and contribute to its future development.

This research is important as the effort is in tandem with the United Nations Sustainable Development Goals (UN-SDGs) which aims to promote peace and prosperity for people and the planet, now and into the future. Through the proposed framework, it is hoped that there will be a shift in the mindset of the industrialists and policymakers to implement the changes from the traditional linear supply chain model which has contributed to environmental degradation, pollution, and climate change to a healthy circular supply chain practice.

2. Literature Review

To meet the demands of today's transnational and multigenerational consumers, supply chain management is widely acknowledged as a critical driver of economic success by businesses (Alshahrani & Salam, 2022). Unfortunately, several studies have linked the existing linear manufacturing and distribution supply chain structures to issues related to hazardous waste, ecological degradation, and global warming (Khan et al., 2022). Circular supply chain management, a practical supply chain integration model is seen as the solution to address this problem. Its goal is to eliminate waste and contamination throughout the supply chain network while also mitigating material fluxes (Genovese et al., 2017). Circular supply chain practices are also predicted to help businesses contribute to the development of a sustainable economy while also encouraging participation in a socially fair society (Ayati et al., 2022).

The significance of circular supply chain practices further deepens with the latest move of Malaysia's biggest trading partners such as the United States, China, Singapore, Japan, and the European Union in translating their net zero pledges into reality. (PricewaterhouseCoopers, 2023). This development will require Malaysia to take immediate resolution in meeting the expectations of the trading partners to keep its competitiveness in trade with other nations in the region. This is because only a limited proportion of Malaysian businesses have progressed beyond waste reduction in their implementation of circular supply chains (Bassi & Dias, 2019). Despite being cognizant of the advantages of a circular supply chain, such as enhanced efficiency, reduced costs, and expanded market opportunities, Malaysian businesses frequently encounter obstacles in the form of financial constraints and talent deficiencies (Rizos et al., 2016).

There is also a shortage of academic studies on the practical methods and tools to support circular supply chain adoption by business entities (Howard et al., 2022). This phenomenon obscures their conceptual bounds and hinders circular supply chain management research and practice. Therefore, this study seeks to help the business to explore the possible methods and tools for managing uncertainty related to circular supply chain management practices. The study aims to bridge the knowledge gap by strengthening the conceptual understanding of circular supply chains and establishing implementation practices, particularly for Malaysian businesses. It is hoped that this study will provide a thorough understanding of the main factors that can improve the effectiveness of circular supply chain management methods. The proposed methodologies and tools will help Malaysian businesses shift away from traditional approaches that prioritize cost, quality, and output towards a new idea of zero waste production based on a regenerative and restorative business model. The strategies proposed will provide crucial components that contribute to the effectiveness of circular supply chain practices. As well as to provide the right tools and tactics to limit the negative implications that it might cause to the operations.

3. Methodology

This study aims to conduct a comprehensive investigation into the complex dynamics of circular supply chains and their adoption by businesses. To achieve these goals, the study uses the scoping review approach to comprehensively analyze published works about circular supply chain management. According to Tricco et al. (2018), a scoping review guarantees a meticulous, clear, and replicable approach at every phase of the review process and serves as an excellent instrument for assessing the extent and thoroughness of academic literature about a specific subject. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) were used as the review protocol in this investigation. The evaluation procedure consists of four clearly defined phases: identification, screening, eligibility, and inclusion. PRISMA-

ScR provides a thorough overview of the existing strategies employed by businesses, as well as the key factors that can affect the practical implementation of circular supply chains. It also facilitates the development of a strong and unified framework, backed by theoretical progress obtained from many data sources (Gibbert et al., 2008).

Through the exhaustive PRISMA-ScR search conducted over the Scopus and Web of Science databases, a total of 188 publications were initially included in the study. However, after a rigorous process of identification, screening, eligibility assessment, and inclusion, only 19 articles that satisfied the selection criteria were chosen and subjected to content analysis. This analysis enabled the study to effectively identify the main stakeholders, as well as the enablers and barriers of circular supply chain adoptions. Several recommendations were put forward, to guide the businesses in the successful implementation of circular supply chain practices to support their waste reduction strategy.

Table 1: Overview of articles fulfilling the inclusion criteria

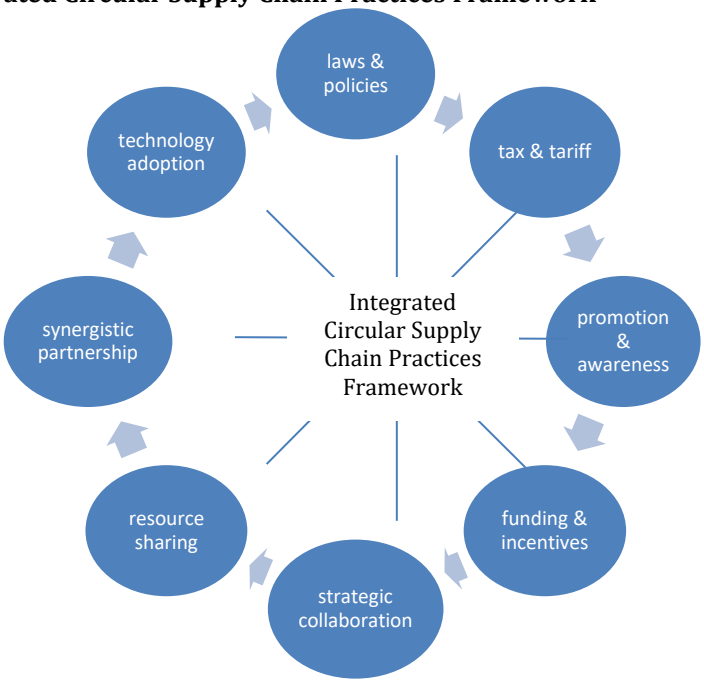
Authors (Years)	Title
Khan et al. (2022)	A grey-based framework for circular supply chain management: a forward step towards sustainability
Chen and Tan (2021)	Exploring the Circular Supply Chain to Reduce Plastic Waste in Singapore
Saroha et al. (2020)	Pressures in the implementation of circular supply chain management (CSCM) for sustainability: An analysis from Indian industries perspective
Tseng et al. (2023)	Causality of circular supply chain management in small and medium-sized enterprises using qualitative information: A waste management practices approach in Indonesia
Bui et al. (2023)	Causality of total resource management in circular supply chain implementation under uncertainty: a context of textile industry in Indonesia
Ciccullo et al. (2023)	Designing circular supply chains in start-up companies: evidence from Italian fashion and construction start-ups
Yan et al. (2022)	Exploring the factors to promote circular supply chain implementation in the smart logistics ecological chain
Tseng et al. (2022)	Healthcare industry circular supply chain collaboration in Vietnam: vision and learning influences on the connection in a circular supply chain and circularity business model
Cao et al. (2022)	Identifying critical eco-innovation practices in circular supply chain management: evidence from the textile and clothing industry
Kayikci et al. (2022)	Analyzing the drivers of smart sustainable circular supply chain for sustainable development goals through stakeholder theory
Bhattacharya and Kalakbandi (2023)	Barriers to the circular supply chain: the case of unorganized tire retreading in India
Mangla et al. (2018)	Barriers to effective circular supply chain management in a developing country context
Milki and Islam (2021)	Barriers to Circular Supply Chain Adoption: A Perspective of Electric Battery Industries of Bangladesh
Lahane and Kant (2021)	Evaluating the circular supply chain implementation barriers using the Pythagorean fuzzy AHP-DEMATEL approach
Saroha et al. (2022)	Identification and analysis of circular supply chain management practices for sustainability: a fuzzy- DEMATEL approach
Khan and Ali (2022)	Implementation of the circular supply chain management in the pharmaceutical industry
Chhimwal et al. (2021)	Measuring Circular Supply Chain Risk: A Bayesian Network Methodology
Tseng et al. (2021)	Modelling hierarchical circular supply chain management enablers in the seafood processing industry in Vietnam under uncertainties
Luthra et al. (2022)	Overcoming barriers to cross-sector collaboration in circular supply chain management: a multi-method approach

The thematic analysis of the papers shows that the effective execution of circular supply chain operations is influenced by five interrelated important entities: government, industry stakeholders, corporate management, end users, and financial institutions. The support from these important entities is further divided into eight interrelated significant structures. The structures include laws and policies, tax and tariff, promotion and awareness, funding and incentives, strategic collaboration, resource sharing, synergistic partnership, and technology adoption.

4. Discussion

The structure described above encompasses a diverse array of factors that are crucial prerequisites for creating a functional circular supply chain practices environment. They serve as crucial components that require support from the government, industry stakeholders, corporate management, end customers, and financial institutions. The model shown in Figure 1 below illustrates the fundamental characteristics that make up the integrated circular supply chain practices framework, which are important for ensuring its successful execution.

Figure 1: Integrated Circular Supply Chain Practices Framework



The research shows that the adoption of circular supply chain approaches depends on the efficient administration of five interrelated important entities: government, industry stakeholders, corporate management, end users, and financial institutions. Governmental practices involve the responsible party creating laws and regulations to encourage and assist their execution. This is because a lack of rule enforcement may hinder the development and adoption of circular supply chain permanent solutions. Thus, strong laws and policies are needed to set up effective tax rules and import tariff systems to implement the necessary actions.

In supporting the government effort, industry backing is also essential for successful circular supply chain implementation. Circular supply chain success requires strategic industrial and management solutions. These initiatives involve investing in smart facilities and technology and creating partner resource-sharing and communication platforms. The industry can improve company operations strategically and environmentally by using circular supply chain approaches. It will also lay the framework for industry participants to implement circular supply chain operations. Industry leaders and government agencies must educate, motivate, and teach stakeholders about circular supply chains' benefits.

The business management teams are the next key framework component. While top management makes key decisions, managers with an unclouded vision and precise goals will drive corporate transformation. Circular supply chain goals must be strategically embedded in the organization's practices to ensure organization-wide adoption. By upgrading technology and improving knowledge and abilities, businesses can accomplish circular supply chain targets. This is because advanced technology improves product quality, reduces energy use, and reduces waste. Thus, equipping workers with technology skills and knowledge is essential for resource efficiency.

In terms of end-user roles, integrating knowledge, and social, cultural, and marketing impacts will help them adapt and adjust their thinking because circular supply chain strategies only function if they are accepted. Customers should be encouraged to buy and refurbish eco-friendly things to foster circular supply chain activity. They should be informed about circular thinking and waste minimization, which can efficiently treat managed waste in the manufacturing and supply process while keeping product integrity and preventing obsolescence. Consumers must be made aware that environmental practices save precious resources and the environment.

The final resource in ensuring the successful adoption of circular supply chain practices is funding. This is because the deployment of a new business strategy will affect the financial commitment of a business. Grants from relevant agencies are an effective way to get industry and business management support. Funding will allow the industry and businesses to invest more in intelligent facilities and technology and build partner resource-sharing and communication channels. This financial support will also enable businesses to begin smart and ecological corporate transformation and smart circular supply chain relationships.

5. Conclusion

This study is important for both academics and practitioners as it is the way to understand the significant contribution of circular supply chains to businesses. The framework developed signifies the important contribution of five interrelated parties, which are the government, industry stakeholders, corporate management, end users, and financial institutions. The integrated circular supply chain practices framework set up in the study was construed through a rigorous and well-structured scoping review methodical procedure aided by the utilization of PRISMA-ScR procedures. This study can help businesses in improving their operations while promoting sustainability to cut costs. Hence, the development of the integrated circular supply chain management practices framework is necessary and timely to ensure service deliveries meet industry standards. This prevents business providers from abusing their position and ensures that services meet customer and industry needs.

The findings offered in this study serve as a basis for future research efforts and promote further intellectual discussions focused on enhancing and examining the suggested propositions. More research is needed to verify and enhance the suggested conceptual framework. Hence, future research can integrate qualitative and quantitative research methodologies to investigate the relationship between the elements. To ensure the precision of the conceptual model, future research should incorporate viewpoints from both practitioners and academia.

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