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Enabling the Transition to a Circular Economy: A Literature Review on Stakeholder Collaboration

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Abstract: This study explores the interaction among stakeholder in promoting the transition of businesses from conventional models to circular economy practices. By conducting an extensive literature review of 122 articles from the Scopus database, this research utilizes bibliometric and content analysis to identify significant trends and themes. Over the years, research on the transition toward circular economy practices has increased significantly, growing from a single publication in 2016 to 42 in 2024. The United Kingdom, Germany, and China have emerged as leading contributors to this field, reflecting a global interest in sustainable business transformation. Bibliometric analysis identified four dominant cluster areas: 1) Collaboration and sustainability; 2) Innovation and business model development; 3) Resource management and recycling; 4) Product lifecycle and circular value chain. Findings suggest that a successful transition to a circular economy depends on close collaboration between governments, businesses, and consumers, with technology acting as a key enabler. Notably, consumer awareness and engagement play a critical role in encouraging businesses to embrace circular practices. Without strong partnership among businesses, policymakers, consumer, and other actors, achieving long-term success in circular economy practices would be challenging.

Keywords: bibliometric analysis, content analysis, key enabler, sustainable business, transformation.

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INTRODUCTION

Transitioning from 'business as usual' to a circular economy (CE) is a strategic step to achieve sustainability in various industrial sectors. The CE business model is seen as an effective way for businesses to reduce their reliance on natural resources while enhancing their commitment to waste management practices. CE highlights the reuse, repair, and recycle business models. It is expected that such a business model can help shift the product flow to a closed loop system to reduce a high level of dependence on new natural resources (Nikolaou et al., 2021; Vogiantzi & Tserpes, 2023).

Wasserbaur et al. (2022) pointed out that the crucial instrument to successfully transitioning to a circular economy is the transformation of business models and formulation of government regulation to support the transition. The transition to the circular economy business model (CEBM) requires multi-stakeholders within the supply chain, from the raw materials suppliers to the end consumers, who understand the significance of knowledge and expertise to support long-term sustainability (Pedersen et al., 2019). Geissdoerfer et al. (2017) even asserted that collaboration among stakeholders is an indispensable requirement to successfully develop a circular economy.

The importance of key stakeholders' involvement and motivation is explained further by Sarja et al. (2021), who asserted that the success in transitioning to a circular economy depends not only on a company's size and position in the value chain but also on other stakeholders' motifs and capabilities in the economic system. The collaboration among stakeholders—companies, government, community, and consumers—is highly relevant in the transition to a circular economy (Cramer, 2020b; Dagilienė et al., 2021; Danvers et al., 2023). The reason is collaboration leads to transparency, knowledge transfer, organizational learning, and relationship with the right partner to achieve resource efficiency (Mishra et al., 2020). CE ecosystem is closely related to the roles of multiple stakeholders taking control at various levels, ranging from creative individuals and visionary entrepreneurs to strong institutional support at the national and regional levels (Goyal et al., 2018). To succeed in implementing a circular economy, all stakeholders must be knowledgeable and skilled to effectively govern the value chains, from the upstream to the downstream (Ki et al., 2020). When conducted with sufficient information and communication, such governance can assist each stakeholder to optimally understand their roles and responsibilities.

Although there is literature about the stakeholders' collaboration and involvement, not much research was conducted that comprehensively analyzed how multi-stakeholder collaboration among the government, business actors, and consumers can support the circular economy implementation in various contexts (Ho et al., 2022; Luthra et al., 2022; Mhatre et al., 2021). The same goes for research on the consumers' readiness and acceptance of the circular economy business model, which is still scarce in developing countries (Ki et al., 2020; Wasserbaur et al., 2022). For that reason, this literature review will identify and synthesize the existing findings on the role of multi-stakeholder collaboration in transitioning to a circular economy.

This literature review aims to analyze how multi-stakeholder collaboration can accelerate the transition to a circular economy. Therefore, this study will contribute to the literature by providing insights to cross-sectoral stakeholders to understand the required collaborative practices to strengthen circular economy implementation. This literature review is also expected to enrich the theoretical and practical insights on the ways the stakeholders in the value chains can collaborate to address the challenges in implementing a sustainable circular economy.

METHODS

The method applied in this research is bibliometric analysis and thematic analysis to identify the trend and link among the primary concepts of circular economy in the literature, particularly the stakeholders' roles in the transition to a circular economy. Data were collected from the Scopus database using the following keywords: Transition OR Shift OR transform AND circular_economy AND actor OR stakeholder AND role OR collaboration OR involve*, limited to publications from 2016 to 2024. This search yielded a total of 508 articles. A filter was applied to the results, limiting the scope only to business management and accounting, and resulted in 178

articles. The next applied filter was to narrow down based on the articles' publication source, resulting in 123 articles. The last filter was to look for articles in English, resulting in 122 articles.

A total of 122 articles were analyzed using VOSviewer to generate a visualized network of keywords. This visualization categorized the primary concepts into four main clusters. This bibliometric method is effective in mapping the link patterns among the concepts and identifying the central cluster in the research about circular economy. Following the bibliometric analysis, a content analysis was conducted to systematically review the literature mapped in one of the clusters. This step aims to identify and categorize the main themes emerged from the selected research and correlate it with the research objective, i.e., multi-stakeholder collaboration.

Content analysis follows the bibliometric analysis to conduct advanced screening to the articles by their titles and abstracts. To ensure analysis trustworthiness, this research applied the following approach: applying strict article selection criteria to ensure credibility and comparing the discovered themes with those of previous research (theoretical triangulation). Dependability is reinforced by applying systematic coding, beginning with an open coding to identify primary themes and followed by thematic clustering based on the emerging patterns in the literature. Conformability is ensured through meticulous documentation of the audit trail, facilitating clear tracking of research steps. Transferability is reinforced by describing comprehensively the article selection criteria to pave the way for research results replication in a different context (Kyngäs et al., 2020). The screening resulted in 35 articles to be analyzed to identify various perspectives about the stakeholders and their roles in the transition to a circular economy. The steps of the literature review are illustrated in the following PRISMA protocol (Figure 1).

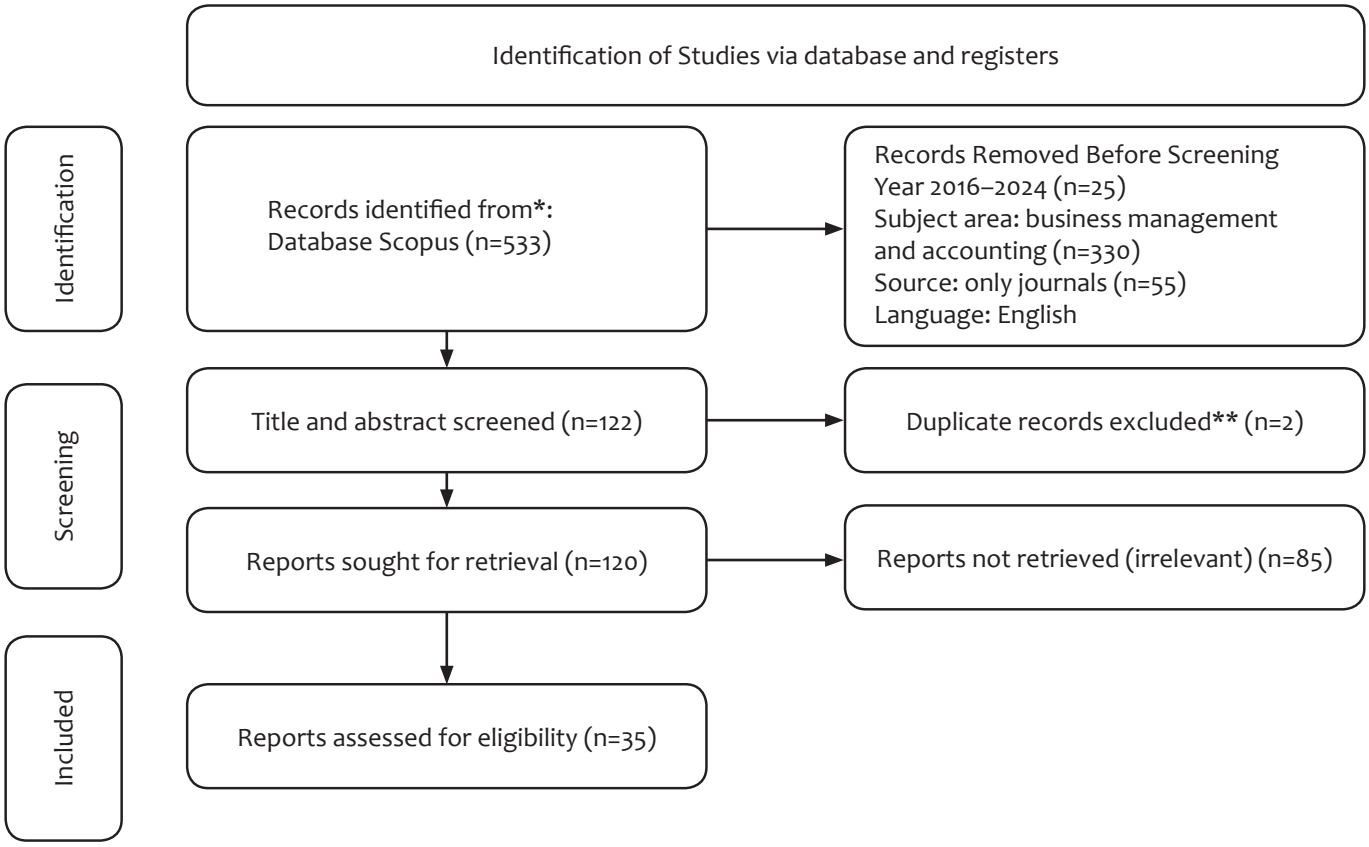


Figure 1 PRISMA Protocol

RESULTS AND DISCUSSION

Figure 2 presents the evolution of studies published in this field. Since 2016, there has been a rise in the number of articles published. It was driven by multiple supporting factors, such as the international policy and initiative in the 2030 agenda for Sustainable Development Goals (SDGs) established by the United Nations, the rising awareness of the negative impact of the traditional linear economy, and the consumers' demand for environmentally-friendly products. The factors drove the search for new solutions to meet the consumers' demand. Those explain the continuous growth of research in this field (Alonso-Muñoz et al., 2022; Rizos et al., 2017). The year 2022–2024 saw a sharp increase in studies in this field.

Figure 3 displays the publication of related studies based on their country of origin. The graphic shows that the United Kingdom dominates with 24 publications, indicating the country's active role in the research and development of a circular economy, along with the stakeholders' involvement. Germany is ranked second with 17 publications, followed by China with 15 publications. Both countries have massive manufacture-oriented industries and economies, that encourage the exploration and adoption of circular economy practices to improve resource efficiency and sustainability. The presence of research from other countries, such as Switzerland and Denmark, indicates that this region generally has a strong commitment to a circular economy, in line with the European Union's policy to support sustainability.

Countries outside Europe, such as Saudi Arabia, Indonesia, and Argentina, have fewer publications. This indicates that the research on the economy in such countries is still growing and not as intensive as in the developed countries. However, publications in this discipline suggest a rising global awareness on the importance of the circular economy, which can be a baseline to increase the number of research on this topic in the future.

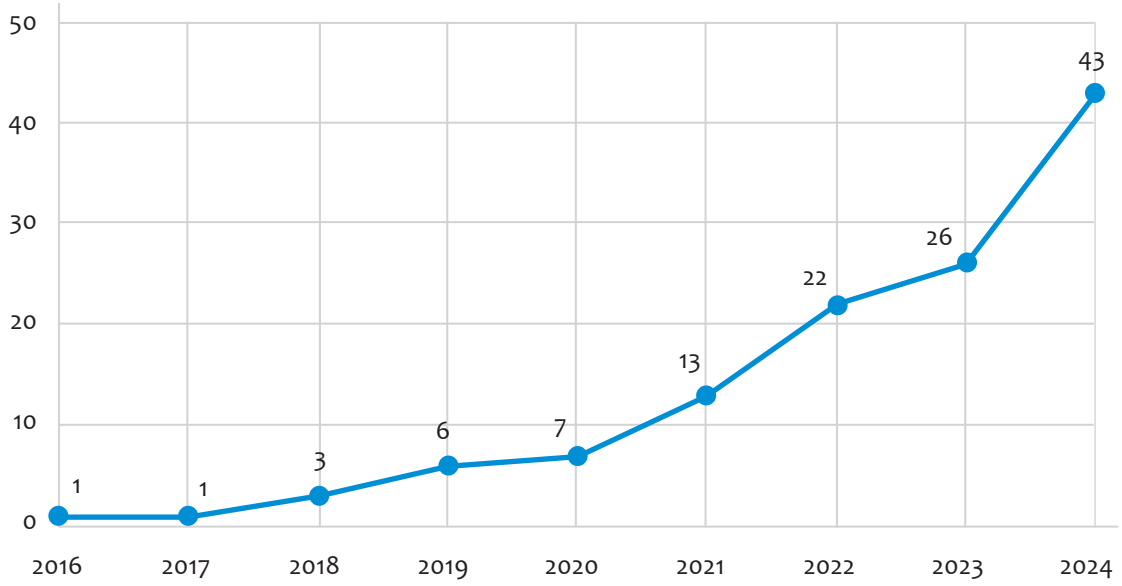


Figure 2 Evolution of research publication numbers on the transition to a circular economy

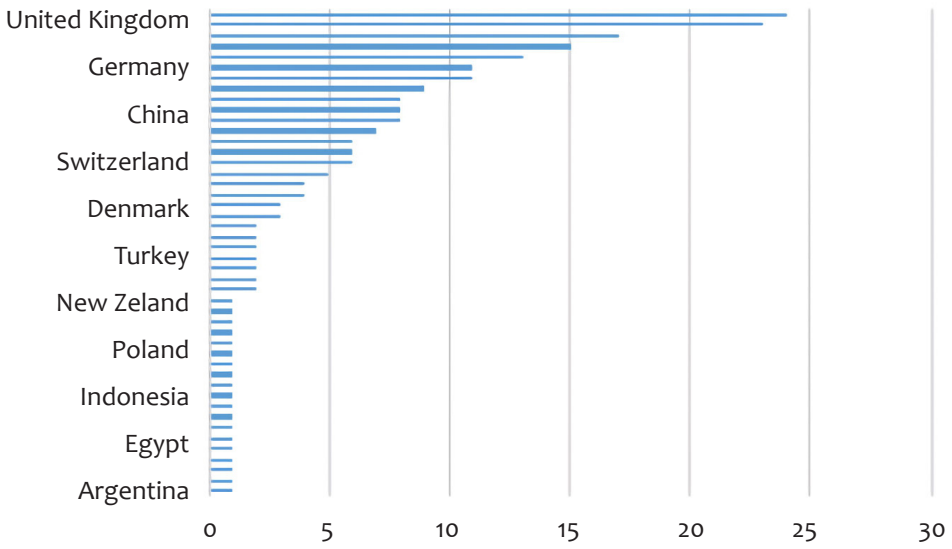


Figure 3 Origin countries of research publications on the transition to a circular economy

A bibliometric analysis was conducted using VOSviewer to map research trends in CE literature (Gomis et al., 2023; Iyiola et al., 2023). The tool allows co-occurrence network visualization, authors collaboration patterns, and keyword clusters (van Eck & Waltman, 2010). VOSviewer output (Figure 4) presents keywords analysis since their occurrences in 2016. Four clusters are created based on the keyword, represented in green, blue, yellow, and red. The clusters are created by using a co-occurrence threshold determined by VOSviewer software. The total value of link strength indicates the link among keywords (van Eck & Waltman, 2010). In this study, 1074 keywords were collected from 122 articles, with a minimum of four occurrences, and 56 keywords met the threshold.

Table 1 was developed based on the identified cluster structure and content, in addition to research trends. The table presents keywords categorized based on their occurrence, the average publication year when the keyword appeared, the average citations from articles containing the keywords, the number of links (the number of keywords appearing with the said keywords in an article), and the total link strength indicating the total strength of the keyword link. A network visualization supports the interpretation of this bibliometric analysis.

The VOSviewer visualization (Figure 4) presents several groups of color illustrated as cluster representations. The four clusters are described as follows:

1. Cluster 1 (red): Collaboration and sustainability
   Table 1 comprehensively lists all terms of this cluster. The visualization of this cluster indicates that multi-stakeholder collaboration (for example, among the government, business actors, and consumers) is crucial in the sustainability and transition to a circular economy. This cluster illustrates that further studies can explore the ways the stakeholders work and how collaboration among them can affect circular economy implementation.
2. Cluster 2 (green): Innovation and business model development
   All keywords of this cluster are listed in Table 1. The primary keywords in this cluster include business models, innovation, economic and social effects, carbon, electric vehicles, and economic waste. Focusing

on innovation and business model in its network visualization, this cluster views the importance of new business and technology in transitioning to a circular economy. By understanding the link among the elements, such as innovation, electric vehicles, and electronic waste management, further studies can provide insights into how innovation can support CEBM.

3. Cluster 3 (blue): Resource management and recycling
   This cluster shows how resource management and recycling are central to the circular economy. The visualization highlights the importance of supply chain management, consumption behavior, and food waste reduction to achieve resource efficiency. It supports the research objectives to assess the resource management strategy to boost sustainability and efficiency in the value chain.
4. Cluster 4 (yellow): Product life cycle and circular value chain
   This cluster illustrates how product lifecycle and product reuse can extend its lifecycle and reduce waste. This represents how the circular economy can be applied in a specific sector like the fashion industry to achieve sustainability.

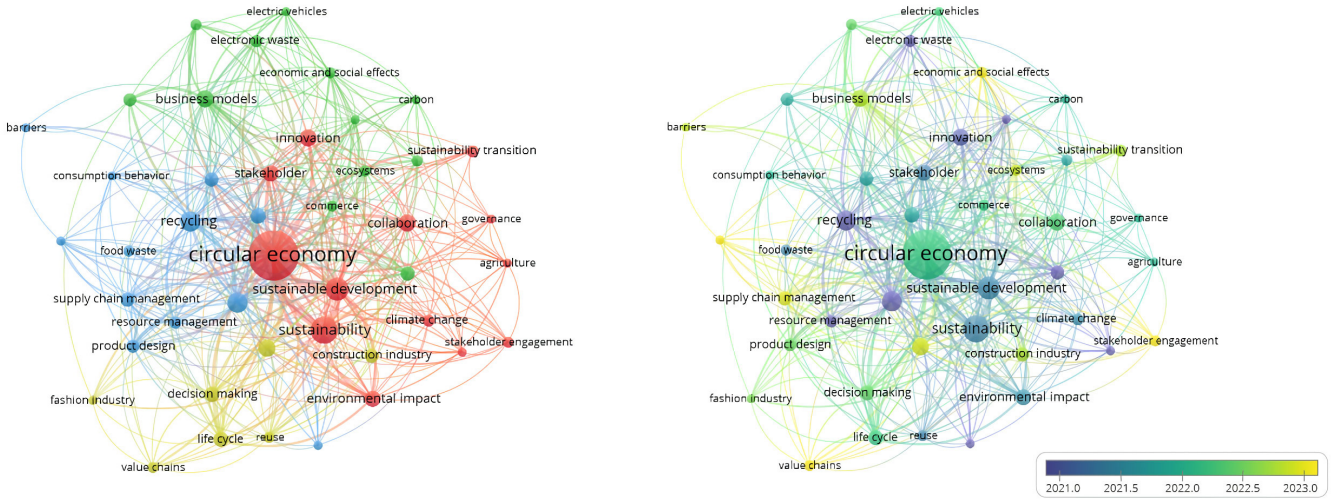


Figure 4 Co-occurrence and overlay analysis generated from VOSviewer

Table 1 Summary of VOSviewer Output

Keyword	Links	Total link strength	Occurrence	AC	AYP
Cluster 1: Collaboration and sustainability (red)					
Agriculture	14	8	4	21	2022
Circular economy	43	292	102	54.9	2022.2
Climate change	20	26	6	20.8	2021.5
Collaboration	23	42	13	9.9	2022.3
Environmental impact	25	55	11	11.8	2021.6
Governance	10	13	4	27.5	2022.0
Innovation	20	44	12	52.3	2021.1
Policy making	16	20	4	24.0	2021.0
Stakeholder	23	48	11	43.3	2021.4

Keyword	Links	Total link strength	Occurrence	AC	AYP
Stakeholder engagement	12	16	5	10.6	2023.0
Sustainability	32	106	30	156.9	2021.4
Sustainability transition	12	18	6	9.8	2022.7
Sustainable development	38	104	23	175.2	2021.4
Cluster 2: Innovation and circular business model development (green)					
Business development	13	25	5	31.4	2022.4
Business models	27	58	13	33.8	2022.7
Carbon	15	19	4	49.0	2022.0
Circular business model	13	23	7	42.4	2021.9
Commerce	16	25	5	41.0	2022.2
Economic and social effect	18	25	5	38.8	2023
Ecosystems	16	23	5	9.0	2022.8
Electric vehicles	15	22	4	68.5	2022.25
Electronic waste	17	29	6	70.3	2020.8
Environmental management	20	25	4	53.3	2021.0
Industrial economics	23	40	9	425.4	2021.0
Knowledge management	16	22	5	28.6	2021.8
Cluster 3: Resource management and recycling					
Barriers	5	7	4	13.0	2022.8
Consumption behavior	16	20	4	9.3	2022
Economic aspect	27	46	8	36.9	2021.7
Environmental Economics	30	57	10	384.4	2021.8
Food waste	12	17	5	19.0	2021.4
Policy implementation	15	20	4	15.0	2023.0
Product design	21	38	7	34.9	2022.4
Recycling	32	82	17	239.8	2020.9
Resource efficiency	11	16	4	958.5	2019.5
Resource management	16	28	6	28.5	2019.5
Supply chain management	20	37	8	22.0	2022.9
Waste management	35	88	17	240.5	2021.0
Cluster 4: Product lifecycle and circular value chain					
Construction industry	16	29	9	6.3	2022.7
Decision making	22	36	10	8.6	2022.4
Fashion industry	10	15	4	35.5	2022.5
Life cycle	23	52	10	15.3	2022.2
Reuse	18	29	5	735.2	2021.4
Supply chains	25	47	12	10.3	2022.8
Value chains	13	20	5	6.2	2023.4

Following the bibliometric analysis using VOSviewer, our focus shifted to further discussing the first cluster. It stated that multistakeholder collaboration is the crucial factor to achieve sustainability. We explored further by conducting thematic analysis of 35 articles to identify the stakeholders involved in the implementation or transition to a circular economy as follows:

Academic and research institutions

These institutions make substantial contributions to implementing the circular economy (Dagilienė et al., 2021; Klofsten et al., 2024; Rokio et al., 2024; Valencia et al., 2024; van Langen et al., 2021). The contributions are as follows:

a. Supporting start-ups. Academic and research institutions, such as universities, play important roles in assisting the start-ups operating within the circular economy. Their roles include providing access to resources, facilitating industrial connections, and mentoring the start-ups (Klofsten et al., 2024).
b. Developing a research base. Van Langen et al. (2021) stated that universities and research institutions contribute to developing a research base to implement a circular economy.
c. Promoting the circular economy through teaching and learning activities in educational institutions, from elementary schools to universities. Such activities help to raise the awareness and spread the knowledge of sustainability among students and society in general (Dagilienė et al., 2021).
d. Developing the skills of technicians and other professionals in the circular economy practice. Universities contribute to providing skilled workforces to implement a circular economy in various industrial sectors (Valencia et al., 2024).
e. Coordinating and managing the knowledge, including the responsibility to allocate research funding to support the circular economy. Universities and research institutions ensure that research is funded and its findings are disseminated to relevant stakeholders (Rokio et al., 2024).

Circular economy facilitator

A circular economy facilitator is an entity or organization that facilitates the implementation of circular economy practices. The facilitator serves as an essential link with relevant stakeholders. It also encourages collaboration and provides the necessary assistance to implement circular economy practices. Non-governmental organizations (NGOs) and civil society organizations are examples of facilitators providing capacity building, support, and essential funding (Valencia et al., 2024). Business development intermediaries, for example, support the start-ups operating in a circular economy entrepreneurship. A business incubator is also a facilitator to integrate the start-ups with a wider business network (Klofsten et al., 2024).

Regulator

The regulator here refers to the government, which plays several important roles as a stakeholder (van Langen et al., 2021) and a policymaker who supports circular economy practices (Barford & Ahmad, 2023; Schultz et al., 2024; van Langen et al., 2021). The government facilitates the adoption of a circular economy by creating and managing an environment supporting circular economy implementation (Mishra et al., 2019; Suarez-Visbal et al., 2024). It also initiates the implementation of CE practices in compliance with the regulations, such as prioritizing inclusive recycling (Cramer, 2020a; Valencia et al., 2024; Zhaksybayeva et al., 2024). This activity comprises responsible recycling and waste management in accordance with the law on the environment (Valencia et al., 2024).

Supply chain actors

Economical actors are important enablers in implementing the circular economy business model. Supply chain actors contribute to encouraging the transition to CE. Companies—multinational companies, focal companies, and MSMEs—are the key factors interconnected in the national and global production and distribution network. They not only produce products and services but also utilize their great potentials with the consumers to implement and promote circular economy practices. The actors are as follows:

a. Multinational companies are massive entities capable of effectuating systemic change in the industry by implementing circular economy globally. This type of company often collaborates with local businesses to expand circular economy implementation by integrating circular economy practices in its global business operation (Ezeudu & Kennedy, 2024).
b. Focal companies control and coordinate supply chain activities. This type of company ensures that circular economy practices are adopted in accordance with the applicable policy (Marques-McEwan et al., 2023).
c. SMEs are business entities that adopt innovation more quickly. They also adjust to change more easily. In the circular economy context, SMEs introduce and implement new practices that support circularity at the micro level. These practices often comprise local innovations and lead to sustainability at the community level (Nyffenegger et al., 2024).
d. Consumers act as advocates of circular economy through their purchase decisions that support sustainability practice, which is often referred to as green purchase behaviour. Such a behaviour is the continuation of the global consumerism movement prompted by consumers' awareness of their rights to obtain environmentally-friendly products (Gunawan et al., 2023; Khoiruman & Haryanto, 2017).

Financial actors

The literature review found that financial actors comprise traditional banks, public funding institutions, investors, venture capital firms, crowdfunding platforms, fintech companies, green banks, and cooperatives (Barrie et al., 2023; Abdul-Jaliland et al., 2021). As a corporate entity, financial institution is responsible to achieve growth, increase shareholders' wealth, provide services to the consumers, and prepare itself against all threat (Hamidu et al., 2018). Therefore, based on such responsibilities, financial actors contribute to the transition to the circular economy by supporting the sustainable and innovative strategies. Research indicated that conventional banks face a significant challenge to assess the risks of the circular business (Linder et al., 2023; Toxopeus et al., 2021). To address such risks, the focus is now on developing a digital infrastructure and investment monitoring system as a promising solution (Fallahi et al., 2023). A study showed that conventional banks still struggle in bank loan disbursement, particularly because of the limitations of conventional risk assessment model and the lack of historical data for a circular economy business model (Toxopeus et al., 2021).

On the other hand, a public funding source, such as the European Union fund and government grant, has proved to be an important catalyst for the circular economy project, particularly in supporting research and development, pilot projects, and infrastructure development (Incekara, 2021). Crowdfunding and peer-to-peer funding platforms indicate potentials to support community involvement, although still limited (Leone et al., 2023). Sharia financial institutions have developed an instrument corresponding to sharia principles and a profit-sharing scheme, with the latter still facing geographical limitations (Abdul-Jaliland et al., 2021). However, the literature review revealed that alternative funding sources, such as crowdfunding and environment-based banks, are more appropriate to support the early stages of circular economy initiatives (Saarinen & Aarikka-Stenroos, 2023).

Local government and municipalities

The literature review found that the local government facilitates the adoption of circular economy by becoming the key intermediary among the stakeholders, i.e., business actors, the society, and other levels of government officials (Anttiroiko, 2023; Nylén et al., 2024; Rincón-Moreno et al., 2022). It also provides financial incentives, infrastructure development, and technical assistance(Rico, 2019; Rincón-Moreno et al., 2022). The latter takes the form of training and capacity building, such as a training about circular economy and sustainability for the Regional Legislative Council members (Radu & Lux, 2024), training about women empowerment in waste management, and information dissemination regarding circular economy (Syauqi et al., 2024), provision of consulting services under the collaboration with local universities, and knowledge transfer about the principles of circular economy practices (Anttiroiko, 2023; Hunka et al., 2021; Rincón-Moreno et al., 2022). The local government also supports the infrastructure and system, such as assistance in developing the system of waste management (Syauqi et al., 2024). It also supports the market development by facilitating a discussion between consumers and actors in the supply chain (Alhola et al., 2019). Support is also provided for business actors to understand and adhere to the national regulation related to industrial symbiosis (Newsholme et al., 2022). The local government also supports the development of a circular economy business model for business actors (Armillei et al., 2024). Literature review also revealed that the localgovernment's success in implementing the circular economy often depends on the adjustment of initiatives to local geographical, cultural, and economical conditions (Anttiroiko, 2023; Hunka et al., 2021; Rincón-Moreno et al., 2022). Table 2 lists the roles of each stakeholder.

Table 2 The roles of stakeholders in the circular economy

Stakeholder	Main roles	References
Academic and research institution	Supporting the start-ups, developing research, and training the workforce	(Dagilienė et al., 2021; Klofsten et al., 2024; Rokio et al., 2024; Valencia et al., 2024; van Langen et al., 2021)
Circular economy facilitator	Connecting the stakeholders, providing trainings, and supporting the start-ups	Valencia et al. (2024); Klofsten et al. (2024)
Regulator (central government)	Making policies, overseeing circular economy implementation, and providing incentives	Valencia et al. (2024); Klofsten et al. (2024)
Supply chain actors	Implementing circular economy business model, managing the supply chain, and driving sustainable consumption.	Ezeudu & Kennedy (2024); Marques-McEwan et al. (2023); Nyffenegger et al. (2024)
Financial actors	Providing funding for businesses applying the circular economy practices.	Barrie et al. (2023); Abdul-Jaliland et al. (2021); Toxopeus et al. (2021)
Local government and municipalities	Facilitating local regulations, infrastructures, education, and waste management.	Barrie et al. (2023); Abdul-Jaliland et al. (2021); Toxopeus et al. (2021)

The literature review indicates that collaboration among stakeholder is crucial in the four clusters identified earlier. Stakeholder relationships enable joint value creation activities that advance circular economy business (Tapaninaho & Heikkinen, 2022). This means that a deep understanding of the roles and relationships among stakeholders enables policy makers and business practitioners to formulate effective strategies to support the circular economy (Adabre et al., 2024; van Buren et al., 2016).

In the Collaboration and Sustainability cluster, the interaction between government, companies, and consumers is proven fundamental. The government's role involves setting regulations and providing incentives (Lamoureux et al., 2019). Companies, on the other hand, must collaborate not only among themselves but also with consumers to educate and encourage the adoption of sustainable behaviours (Ezdini, 2023). A concrete example of this is the recycling programs that involve collaboration between local governments, waste processing companies, and the community (Ddiba et al., 2020).

The Innovation and Business Model Development cluster shows that sustainable technological innovations and business models can be developed through collaboration between academic institutions, technology start-ups, and large industries. Educational and research institutions play a role in generating innovative research, which can then be adopted by companies to develop into sustainable commercial solutions (Alvarez-Meaza et al., 2020). This aligns with the view of Terán-Bustamante et al. (2021) that universities, institute, and public research centers play a strategic role at the national level by producing technological knowledge that can be transferred to industry. This knowledge, in turn, can be transformed into economic and value – not only for users and clients but also for the institutions themselves and society as whole.

In the Resource Management and Recycling cluster, it was found that collaboration between manufacturing companies and recycling companies is essential to enhance resource use efficiency. These cross-industrial collaborations are particularly important for scaling up circular economy initiatives (Ratsimandresey & Miemczyk, 2023). These companies need to collaborate to ensure that the materials used can be recycled to the maximum, thus reducing waste and extending the material's lifecycle.

In the Product Lifecycle and Circular Value Chain cluster, an integrated value chain system is essential, where producers, distributors, and consumers work together to maximize product use. A circular economy (CE) requires fundamental changes across the value chain, including product design, business models, and consumption patterns (Bocken et al., 2016; Burke et al., 2023). To support this, products must be designed for easy repair, maintenance, and material recovery, extending their lifespan through repasir, refurbishment, and remanufacturing (Pozo Arcos et al., 2018; Van Den Berg & Bakker, 2015). Figure 5 provides a summary of how different stakeholders interact within the four cluster.

Goyal et al. (2018) asserted that the success of a circular economy ecosystem is highly dependent on multi-stakeholder synergy, particularly creative individuals and visionary entrepreneurs who can utilize new technology and support the policy regulating the ecosystem at micro, meso, and macro levels. The circular economy is portrayed in three levels (Barreiro-Gen & Lozano, 2020; van Bueren et al., 2023) in Figure 6.

1. Micro level, includes the actions arising from the consumers, product, and company.
2. Meso level, includes the urban-industrial symbiosis, supply chain, and end-of-life products.
3. Macro level: XL is used to represent the planet, L for the continent, M for the big province, state, and small country, S for the city, and XS for the neighborhood.

The implementation of technology knowledge is an innovation catalyst in the value chain, particularly in the transition to a circular economy. Digital technology and Industry 4.0 allow an increase in resource flow, value creation, and business model innovation, that strengthen circularity practices such as reuse, recycling, and remanufacturing (Ranta et al., 2021; Zahraei & Shooshtarian, 2023). The management of knowledge in the circular supply chain drives radical innovation and new product development, which strengthens the competitiveness in the value chain (Alonso-Muñoz et al., 2021). This finding indicates that creativity and technology are central to developing a circular economy-based business. This is in line with the visualization result of the innovation and circular economy development cluster in the bibliometric analysis.

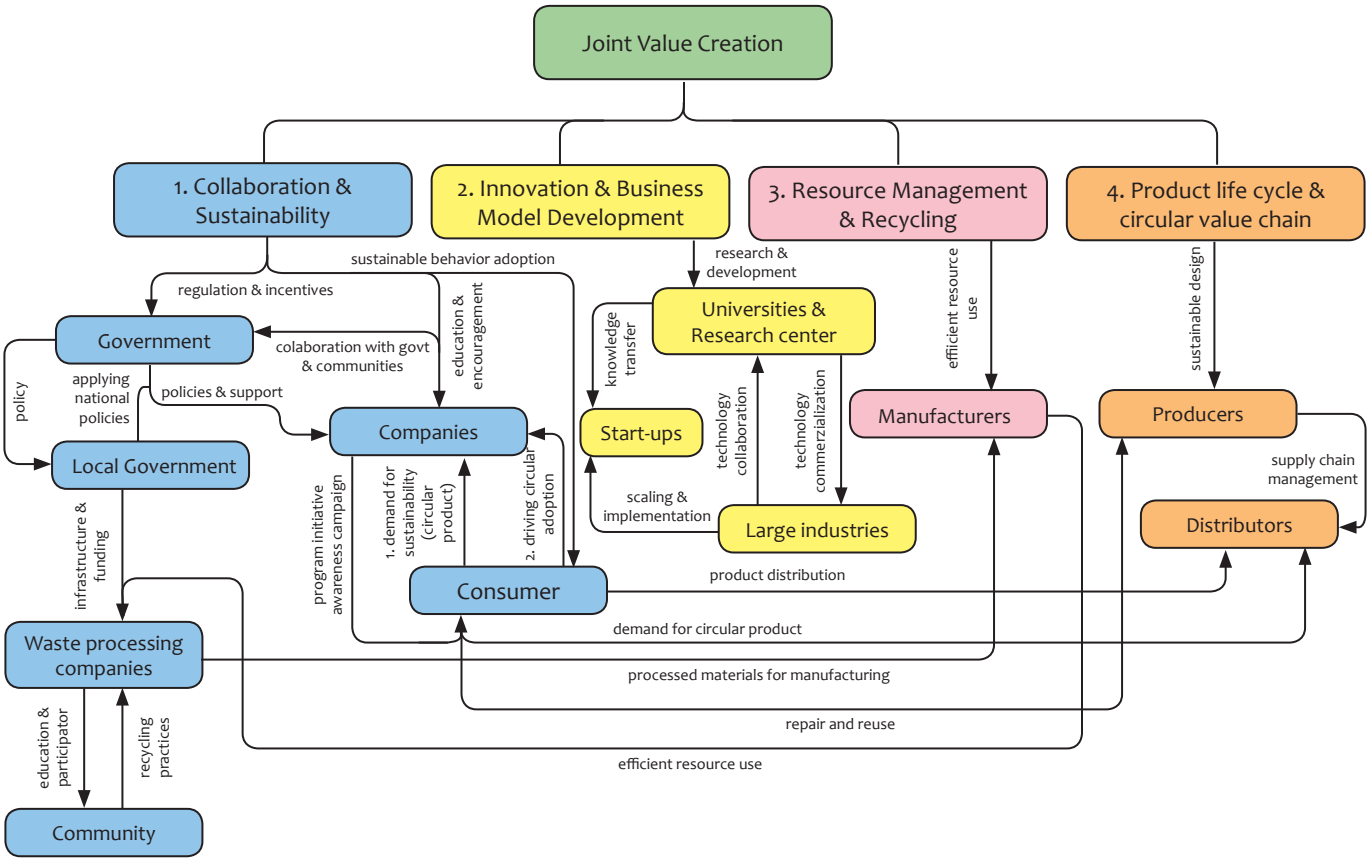
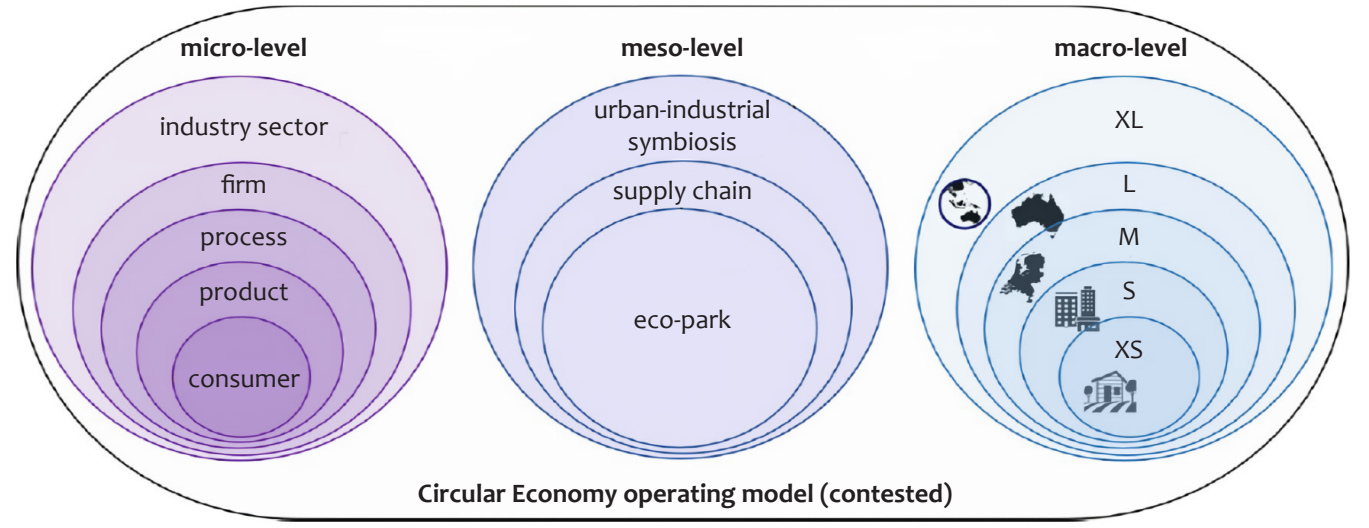


Figure 5 Stakeholder interaction in circular economy clusters



Sumber: van Bueren et al. 2023

Figure 6 Circular economy operating model

In addition, Pedersen et al. (2019) stated that one of the important factors in implementing a circular economy in the industry is the knowledge and expertise along the value chain. Therefore, for a successful circular economy implementation, each stakeholder in the value chain from the upstream to downstream needs to have profound knowledge of the circular economy concept (Awan & Sroufe, 2022; Pedersen et al., 2023). Implementation of CE practices requires the collaboration of multi-stakeholder, digital technology adoption, and concerns about social aspects (Kusumowardani et al., 2021; Lacovidou et al., 2021). The transition to CE influences multiple processes in the value chain, such as logistics, marketing, and services (Awan et al., 2022; Eisenreich et al., 2022). This goes in line with the cluster that emphasizes the stakeholders' role in maintaining sustainability and effective supply chain management. Thus, achieving a circular economy requires collaboration based on the stakeholder's knowledge of the value chain.

Consumers play a crucial role as the key driver in the transition to a circular economy (Barreiro-Gen & Lozano, 2020; Bucur, 2023; Lopes et al., 2023). Consumer awareness and involvement influence the business decisions to adopt the principles of circular economy, Kirchherr et al. (2017) found that consumers' lack of interest and awareness of a circular economy is among the main hurdles in implementing a circular economy business model. Another research stated that consumers' concerns for the environment are not in line with purchasing sustainable products. Despite such a concern, consumers are not motivated to purchase sustainable products (Musova et al., 2021; Sijtsema et al., 2020). This condition indicates a dynamic between their awareness of the environment and their final decision to purchase the products. Companies should be aware of this condition before developing an effective circular economy strategy. As an enabler, consumers are not only end users but also drivers for the company to apply practices of circular economy.

CONCLUSION

The transition to a circular economy requires a synergy of the various stakeholders at the micro, meso, and macro levels. The four main clusters identified are collaboration and sustainability, innovation and business model development, resource management and recycling, and product lifecycle & circular value chain. The clusters indicate that the success of implementing a circular economy depends on the collaboration of the key players—the government, business actors, and consumers. A holistic approach will strengthen sustainability and support the efforts to achieve business goals based on a circular economy in various sectors. In the future, more advanced research can be conducted by analyzing the collaboration among the actors within the circular economy, developing the strategy to raise consumer awareness, and exploring the best government-made policy to accelerate the adoption of the circular economy that fits the local social and economic conditions.

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