Title: The Critical Role of Procurement in the Emergence of Circular Business Models: Insights from Multiple Cases of Vietnamese Manufacturers

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Abstract

Although the contribution of the procurement function to the development of a circular business model (CBM) in organisations has been recently acknowledged by, for example, ensuring compliance with the principles of a circular economy (CE) and supplier management with the consideration of non-financial aspects, there is a lack of an in-depth study that comprehensively investigates the potential of procurement in the transition toward circularity. By adopting a qualitative research approach based on four Vietnamese manufacturers, this paper aims to explore the role of procurement in the transition toward the CBM. This research suggests several contributions of the procurement function for facilitating the implementation of a CBM, including supporting recyclability and reusability, reducing waste, and enhancing ethical standards while aligning with the enterprise's competitive strategy. As a result of this research, a circular procurement framework is introduced, which could motivate future research to expand the procurement function's contribution further toward CBM implementation in an organisation.

Keywords: circular economy, circular business model, procurement, manufacturers.

1. Introduction

There is a consensus amongst existing literature regarding the necessity of developing approaches to address the economic, social, and environmental challenges while maintaining a shift towards sustainability (Farooque et al., 2019; Wang et al., 2022; Yin et al., 2023). The recent development concept of a circular economy (CE) has arisen as one such approach that can help achieve sustainability goals and promote economic growth (Farooque et al., 2019; Rainville, 2021). CE challenges the linear economic model by changing how we manage resources, produce and consume products, and then deal with waste. However, to realize the full potential of CE, strategic and operational implementation of the CE concept is necessary for businesses; it is also essential for governments and international bodies to establish consistent regulations (Neessen et al., 2021; Nguyen et al., 2023). Despite the potential benefits of CE, there currently needs to be more consensus about its theoretical framework, which hinders the potential and strategic implementation of CE principles (Testa et al., 2012; Farooque et al., 2019). Therefore, there is a need for a better translation of CE goals and principles into practices, and more coordinated efforts among different settings and context of implementation.

Nguyen et al. (2023) suggest that, due to increasing competition, changing customer demands, and economic pressures, business environments are constantly evolving, and this holds particularly true for developing countries with their unique socio-economic dynamics. Bag et al. (2020) emphasize that efficient resource management is critical to the effective management of supply chains based on circular economy (CE) principles, which becomes even more pertinent in the resource-constrained environments of many developing nations. Recycling and remanufacturing can be particularly challenging in these contexts due to inadequate waste management infrastructure and technological limitations. To carry out these operations successfully, companies in developing countries must manage their procurement and logistics flows effectively, often facing additional hurdles related to underdeveloped supply chain systems and regulatory frameworks (Farooque et al., 2019; Kosmol et al., 2019). Additionally, procurement is increasingly seen as a critical activity for organizations in these countries to achieve their strategic goals, aligning their efforts with sustainable development initiatives and addressing social and environmental disparities (Testa et al., 2012; Neessen et al., 2021). Considering the necessity of businesses in developing countries to adopt CE both strategically and operationally, there is a demand for a fresh procurement approach that is more cooperative and comprehensive, adapting to the specific challenges and opportunities of these regions (Alhola et al., 2019; Vermunt et al., 2019).

Witjes & Lozano (2016) and Farooque et al. (2019) found that many studies relating to circularity in supply chain operations have concentrated on supply chain management, sustainability aspects of value chain, business models, waste management, and design. These studies have identified a gap in understanding the critical role of the procurement function in the implementation of CE principles and circular business model (CBM). Procurement is no longer considered to be a peripheral function in organizations (Schneider & Wallenburg, 2012; Walker et al., 2012). Instead, procurement plays a crucial role in CE-based operations by selecting suppliers, establishing strategic supplier partnerships, obtaining sustainability standards, and adopting environmentally friendly processes (Witjes & Lozano, 2016; Lewandowski, 2016; Alhola et al., 2019). These activities allow suppliers to support a company's sustainable development goals (Bag et al. 2020). In other words, the sustainability of a business relies on the durability of its suppliers and collaborators; thus, building sustainable supply chains is crucial for creating and managing sustainable businesses.

As circularity becomes more important in the global sustainability debate, and businesses and supply chains face increasing pressure to become sustainable, there is a need to focus more on the critical role of procurement in implementing CBM (Rainville, 2021; Neessen et al., 2021; Yin et al., 2023). Understanding how a procurement function can contribute to the shift toward CBM, the factors that facilitate such a transition, and the obstacles that hinder implementation are all essential questions that must be addressed to gain a better understanding of the concept. The objective of this research is to enhance the knowledge and comprehension of a CE in practice and the procurement function's role in implementing CBM. Thus, this research aims to answer following research questions:

RQ1. What are the contemporary understandings of CE in the procurement practices of manufacturing firms?
RQ2. How can the procurement function contribute to the implementation of CE?
RQ3. What are the challenges that the procurement function may experience during the implementation of CBM?

Since Vietnam is an emerging country with surging manufacturing demands. Our study examines the critical role of procurement in implementing CE principles and CBMs in four manufacturing companies in Vietnam. We conducted 25 in-depth interviews with senior managers and business leaders involved in these companies to provide answers to the above questions. This study fills a notable gap in the existing literature by examining the practices of the circular economy (CE) specifically within the context of Vietnam, where research in this area is limited. Through a

thorough exploration of CE practices, our research contributes valuable insights into the role of procurement in advancing CE principles. Additionally, we have developed a robust conceptual framework that serves as a guiding tool for both academic research and practical implications. This framework aids in understanding and implementing CE practices within procurement, facilitating sustainable resource management, waste reduction, and the promotion of material reuse and recycling.

This study is divided into the following sections. The second section discusses the literature background related to the strategic roles of procurement function and CBM. The third section outlines the research methodology, including data collection and analysis. In the fourth section, the empirical findings are presented. The fifth section discusses the empirical findings and compares them with the existing literature to answer the three key research questions. Finally, in the sixth section, the theoretical and practical implications of this study are discussed, as well as the study's limitations, and potential future research directions are also recommended.

2. Literature Review

2.1. The strategic role of procurement in sustainability

Procurement refers to the systematic process of acquiring materials and services from vendors based on specific terms and conditions outlined in an earlier agreement (Lysons et al., 2016; Kosmol et al., 2019). The main objective of procurement is to ensure that the buyer receives the desired goods and services from the supplier in terms of quality, quantity, and timing, while also keeping costs low (Handfield et al., 2016). Effective procurement decisions are vital for ensuring a smooth supply chain management process. The procurement process involves repetitive actions that continue until the final product is received (Brewer & Speh, 2000). According to Lysons and Farrington (2016), procurement and supply chain management have gained more significance because there is a greater focus on the strategic value of suppliers to businesses. Moreover, as argued by some researchers, such as Kosmol et al. (2019); Bag et al. (2020); Rainville (2021), the role of procurement has transformed from its traditional focus of securing cost-effective and high-quality materials to adopting more strategic objectives with a mid- to long-term perspective, such as resource preservation and sustainable development.

The idea of integrating sustainability into procurement practices is an emerging area for both public and private entities (Witjes & Lozano, 2016; Kristensen et al., 2021). The sustainability of a company is dependent on the sustainability of its suppliers, making procurement a crucial aspect

of sustainable implementation (Testa et al., 2012; Farooque et al., 2019). Procurement considers the sustainability and the economic considerations in managing an organization's external resources. The objective is to guarantee that the provision of any goods, services, abilities, and expertise contributes not only to the advantage of the organization, but also to the benefit of society and the economy in general (Lysons et al., 2016; Leal Filho et al., 2019). Furthermore, incorporating sustainable procurement practices can result in enhanced operational effectiveness and openness within the organization, as well as maintaining adherence to regulations and cost savings, as well as having a more efficient working environment (Rainville, 2021; Qazi & Appolloni, 2022).

Contemporary literature pertaining to supply chain management highlights the significance of incorporating sustainability into a company's core business strategy, processes, and operations (Nguyen et al., 2022; Wang et al., 2022). In this regard, procurement management is expected to play a pivotal role. The procurement function includes two main parts, namely sourcing and purchasing, which are critical components of sustainable procurement practices (Witjes & Lozano, 2016; Lăzăroiu et al., 2020). By selecting suppliers that prioritize sustainability, working with product designers to create environmentally friendly products, improving supply chain management practices, and ensuring that products meet sustainability certifications and standards, sourcing and purchasing can help to develop sustainable procurement (Nguyen et al., 2022). Partnering with sustainable suppliers can ensure that procurement practices align with sustainability goals, while product design can focus on using materials that are reusable or recyclable (Ferri et al., 2016; Neessen et al., 2021). Furthermore, in order for supply chains to function effectively in the new era of CE, procurement and supply management organizations must adapt and embrace this change. Specifically, procurement will have a vital role to play in expediting the adoption of the most up-to-date sustainability initiatives. Fully incorporating the concept of CE into the procurement function is essential to making sustainable procurement and supply chain a standard and important practice (Fayezi et al., 2018; Farooque et al., 2019).

2.2. Resource-Based View (RBV) theory and the potential role of procurement in adopting a circular business model (CBM)

The resource-based view (RBV) theory is a strategic management framework that emphasizes the importance of a company's internal resources and capabilities for achieving a sustainable competitive advantage (Chae et al., 2014; Brandon-Jones et al., 2014). The emergence of the CE can be seen as the latest development in sustainability, representing a shift from a linear, take-make-dispose model of production to a circular, regenerative model (Lahane et al., 2020). While

the concept of sustainability has been around for decades, the CE offers a more holistic approach that seeks to address not only environmental concerns, but also economic and social issues (Bag et al., 2020). By keeping products and materials in use for as long as possible, the CE promotes resource efficiency and waste reduction, while also creating new opportunities for value creation and innovation. Moreover, it has the potential to foster more resilient and equitable economies, by promoting local production and reducing dependence on finite resources (Mangla et al., 2018; Nguyen et al., 2019). In this way, the emergence of the CE represents a significant development in the sustainability landscape, offering a more comprehensive and forward-thinking approach to addressing the complex challenges facing society and the environment.

While the CE is an ideal system that aims to minimize waste and pollution by keeping resources in use for as long as possible, CBM are a set of strategies and practices that businesses can use to implement CE principles (Fogarassy & Finger, 2020). These models involve designing products and services that are durable and reusable, as well as being easy to repair and recycle. They also involve the use of renewable energy, the sharing economy, and closed-loop supply chains. CBMs can help to reduce waste and pollution, while also creating new business opportunities and reducing costs (Geisendorf & Pietrulla, 2018). By adopting CBMs, businesses can reduce their environmental impact, enhance their resilience, and create more sustainable products and services. The research by Harala et al. (2023) suggests that developing innovative approaches toward circularity involves finding new approaches to offer value to stakeholders and examine the economic value of products throughout their lifecycle to enhance resource efficiency and effectiveness. Pieroni et al. (2019) states that the implementation of the CE principles through a practice-oriented business model innovation approach can lead to the concept of CBM. These models incorporate features that narrow and close resource loops, thereby reducing the number of resources entering the organization and its value network while minimizing waste and emissions (Geisendorf & Pietrulla, 2018; Pieroni et al., 2019).

CE represents a drastic change that necessitates a new approach to conducting business (Bocken et al., 2016). CE requires a significant number of organizational innovations, in addition to technological and innovative products (Harala et al., 2023). Companies today are not adequately equipped to take advantage of the opportunities presented by CE as their approach to strategies, structure, and operations is strongly impacted by the linear method. To capitalize on circular practices, companies must develop BMs that do not adhere to the traditional linear thinking. Furthermore, Bocken et al. (2019) argues that businesses must embrace a forward-thinking mindset that transcends the immediate supply chain requirements for their present operations to derive advantages from circular practices. Lacy and Rutqvist (2015) identify several main types of

CBMs, and each of them comprises distinct sub-models that protect the inherent value in a product, component, material, or process. Each of these CBMs signifies a separate strategic choice that has consequences for the prospective central value proposition offered to customers in the future.

The first model is the Product-as-a-Service (PaaS), which is gaining popularity in the CE. It is a service-based approach where, instead of selling a product, a company offers access to a product as a service (Fogarassy & Finger, 2020). PaaS is a key component of the CE as it promotes the transition from a linear, "take-make-waste" model to a more sustainable and circular one. This enables companies to design products for durability and repairability, as well as implementing strategies to extend the lifespan of products (Lacy et al., 2015; Bag et al., 2021). Furthermore, this helps to reduce the amount of waste generated by products and reduces the environmental impact of manufacturing new products (Bag et al., 2021; Dey et al., 2022).

The procurement function plays a vital role in the implementation and success of the PaaS model. As PaaS involves offering products as a service, the procurement function can establish strategic partnerships with suppliers to ensure a steady supply of products and components for providing the service (Lacy et al., 2015; Bag et al., 2021). The procurement function should focus on procuring durable and high-quality products that can withstand multiple uses and fulfill customer expectations. Additionally, the procurement function needs to collaborate with the other functions to negotiate contracts with suppliers that align with the subscription-based nature of PaaS (Akhavan & Beckmann, 2017). By effectively managing the sourcing, selection, and relationship with suppliers, procurement can contribute to the profitability and customer engagement of the PaaS model.

Second, the product life extension (PLE) model focuses on extending the useful life of products by repairing, refurbishing, and upgrading them, rather than disposing of them after their initial use (Bag et al., 2021; Milios, 2021). This approach can help to reduce the demand for new products and the extraction of raw materials, which, in turn, can reduce the environmental impact of both manufacturing and waste (Bao et al., 2019; Ntsonde et al., 2021). The product life extension model can also create new business opportunities for companies that offer repair, refurbishment, and the upgrading of services (Bakker et al., 2014; Toker et al., 2023). To implement the product life extension model, companies can design products for durability and repairability, provide repair and maintenance services, and encourage consumers to take care of their products and extend their lifespan through proper use and maintenance. Procurement is responsible for identifying and sourcing new components, materials, or technologies required to extend the existing product line (Schneider & Wallenburg, 20120. This function must actively seek suppliers who can provide the

necessary resources at competitive prices while ensuring quality and reliability. Effective collaboration with suppliers and understanding market trends enable procurement to identify innovative products or technologies that align with customer demands and the organisation's strategic objectives (Witjes & Lozano, 2016; Dey et al., 2022).

Third, the Resource Recovery (RR) model aims to create a regenerative and restorative system that reduces waste and maximises the use of resources. In the resource recovery model, waste is seen as a potential resource that can be recovered and used again (Bao et al., 2019; Vermunt et al., 2019). This approach involves designing products and processes to minimise waste and increase the potential for material recovery, reuse, and recycling (Dey et al., 2022). The RR model also involves collaboration between different sectors, such as waste management companies, recycling facilities, and manufacturers, to create a more integrated and circular system for resource recovery (Burneo et al., 2020). Procurement can adopt a CE mindset and identify suppliers who prioritise sustainable practices and offer environmentally friendly products (Kristensen et al., 2021; Dey et al., 2022). By partnering with suppliers committed to reducing waste, recycling materials, and minimising environmental impact, procurement can ensure the availability of recycled or recovered resources for the organisation. This involves establishing clear specifications for materials that can be recovered, collaborating with suppliers to implement effective take-back programs, and promoting closed-loop supply chains.

Finally, the circular supply chain (CSC) model is a key concept in the CE, which aims to create a regenerative and restorative system that maximises the use of resources and reduces waste (Mangla et al., 2018; Xu et al., 2022). The CSC involves a closed-loop system where materials and products are continuously reused and recycled rather than being thrown away after a single use (Toker et al., 2023). The CSC also involves collaboration and communication among different stakeholders, such as suppliers, manufacturers, distributors, and customers, to create a more integrated and circular system for resource management (Bao et al., 2019; Choi & Chen, 2021). By adopting a CSC, companies can reduce their reliance on virgin resources, decrease waste and pollution, and create new business opportunities for resource recovery and recycling. Procurement plays a key role in identifying suppliers who embrace circular economy principles, such as using renewable resources, implementing closed-loop systems, and minimising waste generation (Akhavan & Beckmann, 2017; De Giacomo et al., 2019). They need to establish collaborative partnerships with suppliers to ensure the availability of products that can be easily repaired, remanufactured, or recycled within the circular supply chain. Procurement should also seek suppliers who offer innovative solutions and technologies that enable the organisation to optimise material flows, reduce dependence on virgin resources, and extend product lifecycles (Walker et al., 2012; Dey et

al., 2022). By integrating sustainability criteria into supplier selection, fostering supplier collaboration, and implementing effective reverse logistics processes, procurement contributes to the establishment of a CSC that maximises resource efficiency and minimises environmental impact.

PaaS, PLE, RR, and CSC all involve the efficient use of resources, which is a key aspect of the RBV theory. By developing and implementing these CE strategies, companies can improve their resource efficiency, reduce waste, and create value for customers while maintaining sustainable development (Geisendorf & Pietrulla, 2018; Xu et al., 2022). Moreover, the procurement function can also contribute to identifying and acquiring sustainable resources that align with the CE principles. This can include sourcing materials that are recyclable or made from recycled materials or collaborating with suppliers who adopt sustainable practices (Lahane et al., 2020; Dey et al., 2022). By doing so, a firm can ensure that its procurement function is contributing to the creation of a more sustainable supply chain and organisation (Akhavan & Beckmann, 2017; De Giacomo et al., 2019). However, the role of procurement in CE and CBMs has not been addressed properly, and thus, this research aims to fill this research gap.

CBM	**Concepts**	**Potential impacts of procurement function in each model**	**References**
PaaS model	instead of selling a product, offers access to a product as a service	• procuring durable and high-quality products • negotiate contracts with suppliers that align with the subscription-based nature of PaaS	Lacy et al., 2015; Fogarassy & Finger, 2020; Bag et al., 2021; Dey et al., 2022
PLE model	extending useful life of products by repairing, refurbishing and upgrading	• responsible for identifying and sourcing components and materials required to extend the existing product line	Bao etal., 2019; Bag et al., 2021; Milios, 2021; Ntsonde et al., 2021; Toker et al., 2023
RR model	create a system that reduces waste and maximizes the use of resources	• prioritize sustainable practices and offer environmentally friendly products	Bao etal., 2019; Vermunt et al., 2019; Burneo et al., 2020; Dey et al., 2022

		• ensure the availability of recycled or recovered resources for the organisation • implement effective take-back programs, and promote closed-loop supply chains	
CSC model		• establish partnerships with suppliers to ensure the availability of products that can be easily repaired, remanufactured, or recycled • integrate sustainability criteria into supplier selection, and implement effective reverse logistics processes	Mangla et al., 2018; Bao et al., 2019; Choi & Chen, 2021; Xu et al., 2022; Toker et al., 2023

3. Materials and methods

3.1. Research setting and sample

Our study is based on empirical data collected from four major manufacturers in Vietnam, which indicates their intention to adopt CE principles and develop CBM. Also, The four companies were chosen because they are good examples of practising CE in Vietnam; all of them had been highlighted for best practices in fields of CE initiatives involving operation, innovation, and development and management of the green supply chain. We have used the RBV theoretical framework and adopted an abductive data analysis approach to extend the existing theory on procurement function and CE adoption in these enterprises. Using multiple cases yields more accurate outcomes than relying on a single case alone (Yin, 2017). This is because analysing multiple cases helps establish whether the results are unique to a specific scenario or can be broadly applied, as the results are drawn from examining several cases (Yin, 2014). The case companies have an in-house procurement function and tangible products. Our research adopts the qualitative cross-case comparison, and it focuses on extending knowledge about how the procurement function can contribute to the CBM implementation as well as how factors and challenges within different organisations are related to this involvement. For this paper, we chose companies based on two criteria (i) 1) they are manufacturing companies located near each other (e.g., in the same country - Vietnam) and (ii) companies that handle their procurement function in-house, which seen as having a more concrete and tangible procurement function and products. The companies we

selected for this study may operate in different industries and produce different types of products. Details of each case are described in Table 1 below.

Table 1. Case narrative

Cases	Number of employees	Markets	Main products	Description of business and procurement function	Description of procurement practices
A	324	B2B, B2C	Incandescent bulbs, fluorescent lamps, outdoor lighting, ceiling lights, etc.	Case A is a global provider of lighting solutions that delivers comprehensive packages to both corporate and individual customers. The organization produces a broad variety of lighting products and solutions at its own facilities.	The procurement department at A comprises managers and around ten staffs who play both administrative and decision-making roles within the company. The procurement department is responsible for the financial aspects of A's operations, with specific targets being set for inventory value and circulation. The procurement team also collaborates with other departments, including the technical division, production team, and goods reception.
B	397	B2B	Engines, generators, and marine controls	Case B is the manufacturer of marine engines, generators, and marine controls that combine to offer a complete solution package, including a comprehensive range of marine equipment to meet the needs of the customers, such as cruise, fishing, and offshore vessels. This	Case B's procurement team, which consists of 20 staffs, plays an active and operational role in the daily activities. The procurement function collaborates with both the production and technical departments, with an increased involvement in the supply chain and a desire to be part of the production process.

				company is committed to achieving sustainable and profitable growth while adhering to policies focused on health, safety, environment, and ethics.	
C	385	B2B, B2C	Dried and canned foods	Case C operates as a wholesaler, manufacturer, and exporter of agricultural products. Their operations involve buying produce from farmers, processing them into canned goods, and subsequently selling or exporting them to foreign markets like Japan and Europe	The procurement function of C works in conjunction with production, customer service, distribution, and marketing teams to ensure smooth supply chain operations. From the inception of new components and products, the procurement function is involved and considers commercial factors.
D	402	B2B	Wooden furniture, seats, particle board, and plywood	Case D is a manufacturing company that produces wood and furniture. Its operations include the creation, processing, and preparation of wooden furniture.	The procurement function, which involves transactional and commercial activities, is overseen by the production manager and partly involves tendering. Due to the significant costs associated with raw materials, Case D recognizes the strategic importance of procurement. However, the procurement team does not collaborate much with other departments, except through the production manager. Instead, it prioritizes establishing long-term relationships with a select group of strategic business partners.

3.2. Data collection

The research team gathered valuable information about the procurement roles and knowledge of CE and CBMs in four case companies through in-depth interviews, informal conversations, and archival data. The data collection was done in multiple stages (Gioia et al., 2013), with the agreement that the identities of the companies and people providing information would remain confidential, except for their job titles. The first stage involved the lead researcher assessing the interest, contribution, and participation of the senior managers of the case companies. In the next stage, the team conducted online and face to face meetings with managers and staff from different roles at the case companies to understand their procurement operations, their understanding of CEs, and the potential of procurement in promoting CE and CBMs. The researchers evaluated the case companies' ability to provide useful data and background information. The third stage involved conducting 25 semi-structured interviews with procurement managers and other senior managers in various positions at the companies, with a particular focus on procurement, planning, supply chain, and sustainability aspects. To enhance the data, the researchers also used a snowball sampling data collection strategy, reaching out to some of the managers and staffs who played a crucial role in the procurement function and the development of CE principles and CBMs, as well as other experts recommended by them. The interview data collection continued either until the saturation point was reached, or when there was no further information provided by the interviewees. Table 2 provides a summary of the interview details.

Table 2. Interview details

No.	Interviewee's position	Experience (years)	Education	Interview time (minutes)
Case A				
1	Production Manager	11	MA	60
2	Head of Procurement	8	BA	84
3	Procurement Operations Manager	9	BA	72
4	Supply Chain and Logistics Specialist	10	BA	70
5	Operation Manager	12	MBA	80
Case B				
6	Supply Chain Director	14	BBA	60

7	Sourcing Manager	15	BA	75
8	Operations Manager	17	BA	60
9	Procurement Consultant	15	MA	82
10	Business Development Manager	12	BA	77
11	Resourcing Advisor	12	BA	79
Case C				
12	Senior Manager - Strategic Procurement	12	MA	67
13	Corporate Procurement Lead	17	MBA	70
14	Assistant General Manager	15	BA	65
15	Resource Consultant	11	MA	68
16	Manufacturing Manager	11	BA	72
17	Direct Procurement Specialist	8	BA	81
18	Supplier Relationship Advisor	12	BA	66
Case D				
19	Deputy General Manager	26	MBA	82
20	Quality Control Manager	12	MA	72
21	Deputy Head of Procurement	12	BA	63
22	Operations Manager	10	BA	65
23	Head of Supply Chain	15	MA	67
24	Resourcing Associate	17	MA	81
25	Supply Chain and Logistics Specialist	12	MA	78

Our research conducted its data collection stages between December 2022 and March 2023, primarily using online replies and via telephone calls. The interviews lasted between 60 and 84 minutes each, and the informants were asked to share their perspectives and experiences freely relating to the research objective without being directed in any particular way. Semi-structured interviews were utilized to gather valuable insights, thoughts, and observations from the respondents. A list of inquiry topics was compiled based on the interviewees' responses, which included in Appendix 1. Interview protocol.

After finishing the interviews, follow-up emails and phone conversations were conducted to obtain further valuable insights from the interviewees. With the consent of each respondent, all interviews were recorded, and notes were taken from the recordings. Besides collecting interview data, archival documents, such as presentations, published reports, and other publicly available sources, were also gathered to compare and validate the interview data. This method of triangulating data permits cross-examination and confirmation of findings from a single investigation, improving the credibility of our study.

3.3. Data analysis

The data collected from this study underwent a three-step process of analysis using the thematic analysis method, which is commonly employed to identify themes accurately that are emerging from case research design (Gioia et al., 2013). Firstly, the researchers gathered and analyzed all interview transcripts and archival documents, searching for recurring phrases and concepts relating to the informants' perspectives and experiences. Secondly, the data sources were re-examined to identify patterns and connections that were used to create themes based on the initial concepts. Finally, a cross-case comparison was conducted to discover common findings across the four cases and group the themes into three overarching dimensions. To ensure a certain degree of reliability, this study employed a three-step data analysis process which involved the use of the intercoder reliability procedure (Nguyen et al., 2023). This involved two researchers independently synthesizing, analyzing, and coding the transcripts and documents, and then comparing the results of the coding process to ensure data consistency. The research team also held follow-up discussions with the informants to maintain data consistency. In addition, to increase the accuracy of the findings, the initial results of the research were sent to respondents in all participating enterprises. The data structure of the research is illustrated in Figure 1.

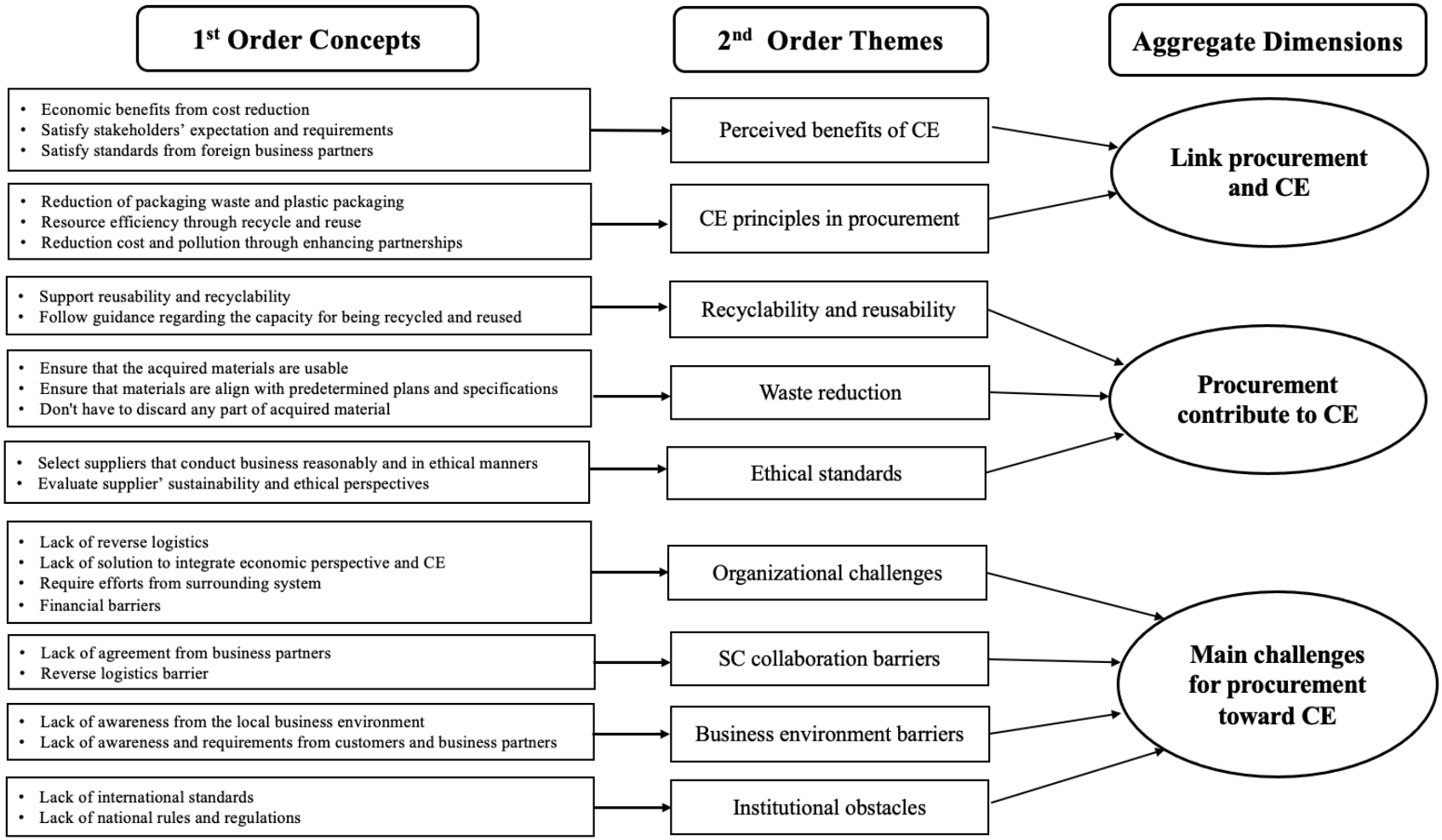

Figure 1. Data structure

4. Findings

4.1. Link procurement and CE

4.1.1 Perceived benefits of CE

Most of the interviewees acknowledged that the main benefit of CE is similar to sustainability in terms of the cost reduction which results from recycling and reusing. The Sourcing Manager of case B stressed the importance of setting strategic goals in the area of CE to facilitate its development and implementation within the company. According to this individual, there is economic potential in adopting CE practices, particularly in terms of coordinating various functions and reducing costs. Similarly, the Operation Manager of case A noted that economic values are still the primary drivers of CE adoption, while the sustainability concerns are considered to be an added bonus.

> "Our company has requested changes in packaging methods to reduce the number of pallets required for delivery. This results in cost savings and also has positive environmental implications by reducing the need for unpacking resources". (Operation Manager, case A)

Elsewhere, Case D is dedicated to regularly decreasing its use of raw materials and has established objectives while examining recycling. This company recognises that implementing CE initiatives can fulfil customer needs and requests, resulting in a competitive edge, "as customers may prefer to purchase products from a company that is committed to sustainable practices" (Deputy Head of Procurement, case D).

In the same vein, the Senior Manager of Strategic Procurement from case C has observed that customers are more interested in sustainable practices, and it sees adopting conscious CE efforts as a means to meet these demands. Furthermore, he believes that demonstrating a dedication to CE principles can fulfil the staff's desire to work for an organisation that prioritizes sustainable development:

> "Managers and young staff prefer to be employed by an organisation that considers sustainability. I believe that younger generations are increasingly conscious of this issue compared to my generation, and this trend is likely to continue and also benefit companies that prioritise sustainability. This effect can be advantageous" (Senior Manager - Strategic Procurement, Case C).

Other respondent also suggests that global and domestic laws, policies, and attitudes surrounding sustainability are compelling advancements toward CE:

> "Sustainability has become an increasingly important concern in recent years, and the CE is seen as one way of addressing this issue. In other words, businesses are under pressure from domestic and foreign regulations and guidelines to make changes in the way they operate, and the shift toward circularity is one way they can meet these expectations" (Production Manager, case A).

4.1.2 CE principles in procurement

In all of the four cases, the relationship of procurement activities and CE initiatives has been confirmed; for example, case B has initiated various initiatives aimed at decreasing energy usage and minimising waste across all departments. The procurement division specifically targets logistics, transportation, packaging, and supplier cooperation as areas within their control. The Head of Procurement of Case A notes that the procurement department's primary emphasis is on decreasing packaging waste and plastic packaging.

Besides, respondent Corporate Procurement Lead from case C affirmed that this company has recently adopted a sustainability perspective regarding procurement, with a particular emphasis on reducing transportation expenses and pollution and fostering partnerships with suppliers and local partners.

> "The focus is also on identifying ways of reducing transportation costs and pollution. A crucial aspect of this effort is comprehending the needs and abilities of the suppliers, and therefore, we strive to collaborate with suppliers in nearby locations. The goal is to find solutions that benefit both parties and improve overall efficiency."

Furthermore, case B has strongly emphasised decreasing transportation costs and pollution. To achieve this, they have recently increased their reliance on sea transportation instead of road transportation. This company also recognises the significance of reducing waste through measures such as production cuts, recycling, and reuse.

> "As a manufacturer, we procure a substantial amount of metal for production purposes. We recognize that the smaller the amount of material we acquire, the lower our energy consumption will be when melting the metal. Therefore, we are mindful of this fact and strive to minimize our material purchases accordingly" (Sourcing Manager, case B).

Additionally, the company's primary focus is on maximizing material efficiency and reusing materials through the melting process. Any metal waste that cannot be melted is sent for recycling. The company has also participated in innovative projects aimed at reducing the amount of material required for the production process and has transitioned to cleaner production.

4.2. The contribution of the procurement function to the implementation of CBM

During the interviews, an interviewee claimed that the procurement department can aid in the adoption of CE by procuring appropriate materials and adhering to guidelines, laws, and regulations, thereby ensuring the possibility of recycling and reusing those materials.

> "There is a chance for us to abide by the instructions to promote CE, as we are encouraged to recycle and reuse whenever feasible. It is imperative that the materials obtained conform to regulations regarding their capacity for being recycled and reused" (Procurement Consultant, case B).

This indicates that regulatory entities must formulate a collection of statutes and rules to steer and motivate corporations in the advancement of CE. Another respondent added that they possess the power to prevent wastage by managing the quantity and the type of materials that are acquired.

> "By making careful purchasing decisions, we can prevent waste and ensure that the materials we acquire are usable. This means that raw materials like wood and metal must be of good quality, match our specifications, and align with our plans, so that we obtain exactly what we require and do not have to discard any part of it" (Direct Procurement Specialist, case C).

This suggests that the procurement department can play a role in implementing CE by ensuring that the quality and quantity of materials acquired are in line with the requirements through appropriate procurement procedures. In addition, with ensuring recyclability, reusability, and waste reduction, another informant suggests that the procurement department plays a crucial role in recognizing environmentally friendly suppliers, engaging in ethical business practices, and continually enhancing their performance:

> "Our goal is to collaborate with suppliers who are appropriate and operate their business in an ethical and reasonable manner. We prefer suppliers who continually improve their knowledge and performance. It is necessary to establish formal requirements for our

> suppliers, and if they do not meet these standards, the procurement function is responsible for finding alternative suppliers. In this way, the procurement function plays a significant role in this process" (Head of Supply Chain, case D).

Additionally, another respondent contends that the procurement department can perform assessments of suppliers to verify their compliance with established requirements:

> "Our contracts contain ethical principles to which we adhere, and we expect our suppliers to follow similar value systems, not necessarily identical to ours. The procurement department plays a role in developing a shared understanding of what is necessary for a supplier to be a long-term partner" (Procurement Operations Manager, case A).

This emphasizes the significance of companies having well-defined principles, directives, and approaches toward CE. Such an approach would enable the procurement division to ensure adherence and play a role in implementing CE comprehensively.

4.3. The main challenges that the procurement function may experience during the implementation of CBM

4.3.1 Organizational challenges

The Operations Manager of case B states that CE is in its early stages and requests for further comprehension on how to execute CE initiatives (CBMs) in an initial economically manner:

> "We are working on solutions that are sufficiently effective and efficient to generate an ample return, then, considering the sustainability perspective."

This suggests that there is a requirement for increasing the awareness, and development of CE principles, along with practical methods for a company to execute it. Meanwhile, in terms of case D, the Deputy Head of Procurement referred to the absence of internal reverse logistics, specifically the recycling-related organizational activities, as a challenge that the procurement function could face. However, this interviewee acknowledges that "external business partners such as sub-contractors, are a solution to overcome these obstacles" for this case.

Interviewees from case C sees the organization's strong emphasis on both costs and quality as a potential obstacle that could hinder the procurement department's efforts to implement CE:

> "The company's operations are centered around both cost-effectiveness and high-quality standards. The fundamental principle of the organization is to be the best in its field and not to provide products at a low cost" (Assistant General Manager, case C).

This suggests that the procurement department could perceive CE strategies, practices, and the operation as more costly than their existing the traditional linear operations, making it difficult to switch to the CBMs. Similarly, another respondent also considers economic benefit as the main concern for both senior managers and procurement managers:

> "If you have to select between different companies, some of them excel in the CE while others don't, but the expense gap between them is significant; it will be challenging to opt for the more expensive option" (Head of Supply Chain, case D).

This implies that the procurement function in our cases gives more importance to economic perspective when evaluating CE and may not consider the potential opportunities for CE and CBM.

4.3.2. Supply chain partners

Several interviewees perceived that the main challenge is both an organizational barrier as well as being *from supply chain partners*:

> "We have collaborated with many business partners in the supply chain, and if we change the standard, for example, by following the CE principles, we need all of the partners to accept and prioritize these standards as well, otherwise, it will create a serious problem for us" (Corporate Procurement Lead, case C).

This means that this company believes that their adoption of CE is linked to how their stakeholders adopt CE. Additionally, the procurement department sees difficulties in implementing reverse logistics because of the challenges in transporting components back to these business for reuse.

Another interviewee also recognizes the size of their organization as a hindrance to influencing the extended supply chain:

> "It is a complex issue. All the links in the chain need to be aligned, and as a small player, it may be challenging for us to execute CE practices" (Procurement Operations Manager, case A).

This suggests that the interviewee may think that, for the case organizations and procurement function in cases to adopt CE principles, the surrounding settings, including their business environment, regulators, and other stakeholders, must also facilitate this transition.

4.3.3. Business environment barriers

Respondents acknowledge that the local market's insufficient knowledge and attention toward CE is a hindrance to its implementation. However, they also note that the concept is rapidly evolving, and express confidence that the market could ultimately encourage the shift toward CE:

> "Although the CE still has a significant distance to cover, it is currently undergoing rapid development. As our society and economy continue to grow and expand, those who are leading the way will be rewarded. Ultimately, their local business environment needs to exert a force that drives progress in this direction" (Deputy General Manager, case D).

Furthermore, other managers see a shortage of attention from customers toward efforts related to the CE as a hindrance to implementing such initiatives:

> "Currently, none of our customers or partners inquire about our proficiency in the CE or sustainability practices when determining whether or not to purchase from us" (Production Manager, case A).

This highlights the requirement for both widespread knowledge about the concept within society and customer demand for the company to implement CE.

4.3.4. Institutional barriers

According to the interviewees, the implementation of CE requires consistent and globally applicable regulations, and the absence of such regulations is a hindrance to achieving this goal. Specifically, one of the interviewees has drawn attention to the discrepancies in health, environmental, and safety laws across nations:

> "The strictness of domestic laws and regulations can be problematic as it increases costs. Additionally, discrepancies in laws and regulations across borders pose a challenge, especially when exporting and competing internationally. Difficulties can be created if other countries have different requirements. Therefore, there is a need for a more equitable distribution of regulations" (Business Development Manager, case B).

This highlights the importance of regulatory agencies in establishing a set of uniform rules that consider discrepancies and offering incentives to ensure adherence to them.

5. Discussion

5.1. The contemporary understanding of CE in the procurement practices of Vietnamese manufacturing firms

Our research shows that the concept of CE is primarily evident in common activities such as reducing, reusing, and recycling materials, as well as using energy and resources efficiently. The Vietnamese companies we studied participate in these activities to some extent, such as by minimizing or eliminating packaging {Case A} and waste {Case C}, reusing easily transformable and recycling materials {Case B}. This suggests that they have some understanding of how CE works, yet they lack a comprehensive understanding. Moreover, the lack of elaboration on how to implement CE suggests a need for a broader understanding of the CE concepts (Bocken et al., 2019; Poldner et al., 2022). Furthermore, our findings indicate that companies view CE mainly from economic aspects, seeing benefits through expenses and cost savings from reducing, reusing materials, and recycles leading to competitive advantages over their peers in terms of sustainability measures. Besides, the empirical findings suggest that, while companies engage in sustainable practices such as reducing packaging and transportation, and collaborating and evaluating suppliers, they lack a systematic understanding of how to implement CE principle in procurement function (Fogarassy & Finger, 2020; Rainville, 2021). However, our case companies recognize the significance of the procurement function in overseeing suppliers and collaborators from a strategic perspective and acknowledge that sustainability initiatives rely on those partners' enduring sustainability. Therefore, the procurement function is crucial to overall sustainability efforts and could play a critical role in facilitating the adoption and acceleration of CE in the future. These findings align with previous studies that emphasize the importance of sustainable procurement practices and policies, particularly in managing supplier relationships (Witjes & Lozano, 2016; Bag et al., 2020; Rainville, 2021). This study also finds that companies primarily see the economic benefits of CE, with environmental benefits perceived as a bonus. However, the case organizations

recognize the necessity of creating novel business models that prioritize the sustainable use of products as an ongoing resource. The case firm believes that internal and external factors are necessary for the implementation of CE, and a joint effort involving cooperation among government entities, regulatory bodies, corporations, and the general public is required to address the issue at hand. These findings align with the motivations and drivers toward CE as described by Testa et al. (2012) and Alhola et al. (2019).

5.2. The contribution of procurement function to the implementation of CE in Vietnamese manufacturers

The empirical findings suggest that our case firms consider the procurement function to be crucial in managing the relationships with suppliers and other external business partners. This viewpoint is confirmed by Fayezi et al. (2018) and Wang et al. (2022), which assert that a firm's sustainability is closely tied to the sustainability of the suppliers from which it procures goods, and as a result, the procurement function can play a role in supporting sustainability initiatives. Our empirical results indicate that the procurement function has the ability to consider factors that extend beyond economic considerations, such as ethical concerns pertaining to the sustainability practices of suppliers. This aligns with Leal Filho et al.'s (2019) view that considering environmental, social, ethical, and economic issues can provide value to the organization and society.

Our study also suggests that the procurement function can support the adoption of CE principles and CBM in Vietnam by identifying and evaluating sustainable suppliers who can follow moral guidelines and critical values set by the case organizations. Additionally, by conducting assessments of suppliers, the procurement department can assess and establish a mutual understanding of the long-term requirements for being a supplier. Fayezi et al. (2018) and Qazi & Appolloni (2022) emphasized that to fulfil their strategic role; the procurement department must possess the critical capability of delving beyond the superficial level. Therefore, establishing guidelines and values is crucial for companies to assist the procurement department in assessing supplier compliance and advancing the company's overall objectives.

The study's results suggest that the procurement function plays a role in implementing the CE principles in the context of Vietnamese business environment, such as the concept of reducing. The reduction principle is evident in the procurement department's capacity to evaluate the company's requirements and guarantee the availability of appropriate resources to prevent undue waste. While the department cannot directly improve production and consumption efficiency, it can prevent waste resulting from the utilization of inappropriate resources and contribute to

achieving eco-efficiency. The study also suggests that the procurement function can support the reuse and recycling principles by evaluating materials used and providing alternatives that enable a greater effort of reuse and recycle. According to Bocken et al. (2019) and Neessen et al. (2021), this is a crucial requirement for companies seeking to embrace circular practices. Finally, the research results also imply that the procurement function can facilitate compliance with regulations and guidelines related to CE and sustainability. Leal Filho et al. (2019) support these findings and state that procurement can support organisational efficiency, transparency, and compliance with regulations. Nevertheless, this also underscores the necessity for governmental and regulatory entities to create laws and regulations to facilitate the implementation of CE principles.

5.3. The challenges that the procurement function has experienced during the implementation of CBM

Our research has shown that the biggest obstacles to implementing CBMs are organisational in nature, such as the inability to expand operations due to business size, a lack of structure, or a lack of support for reverse logistics initiatives from external systems. The costs associated with building new facilities to support reverse logistics also pose a significant financial barrier. However, our findings also suggest that the procurement function can work with external partners to overcome some of these obstacles. However, this may introduce supply chain dependency issues, which aligns with the findings by Vermunt et al. (2019) and Kosmol et al. (2019). Additionally, our research indicates that a need for more awareness about CE principles is a major barrier to adoption. This highlights the need for a greater understanding of how CE can benefit businesses and how to make CBM's financial aspect in practice (Witjes & Lozano, 2016; Qazi & Appolloni, 2022).

With regards to financial obstacles, our research indicates that procurement functions, which focus heavily on reducing expenses and producing high-quality products, may find it difficult to understand or justify the implementation of CBMs. This finding is consistent with the research by Guldmann and Huulgaard (2020), which itself highlights that companies operating under a traditional linear business model base their decisions on financial metrics such as return on initial investments. However, according to Homrich et al. (2018), CBMs face difficulties meeting financial obligations within the same timeframe as operating on a distinct timeline and financial structure. CE solutions demand a long-term perspective that may extend over many years or even more extended periods. This could be perceived as too risky or financially uncertain for manufacturers prioritising cost reduction. This view aligns with the assertion by Tura et al. (2019)

that high economic uncertainty is one of the reasons why CE development can be ineffective, as it is challenging to define and measure the long-term advantages of CE.

Besides, obstacles related to collaboration within the supply chain have delivered significant impacts on the perception of CBMs. Our research suggests that challenges in the supply chain primarily arise in procurement functions that rely on external business partners. Procurement functions that are interested in circularity and are parts of a larger supply chain may actually encounter challenges during the transition to CBMs because all parties in the chain must be involved and therefore share similar concerns (Wang et al., 2022). While a procurement department may be perceived as an internal organizational boundary, it can also function as an external impediment to the supply chain. The supply chain is regarded as a network where all actors must be engaged and possess comparable interests, and a discrepancy in capabilities can lead to unexpected hurdles. This idea is consistent with the views of both Yin et al. (2022) and Wang et al. (2022) in that it is essential to comprehend the supply chain as a system in which all participants and interested parties are engaged in the supply process. This is further supported by the work of Bocken et al. (2019), who argued that CBMs demand an innovative viewpoint which surpasses the present production's direct supply chain and entails deliberation of networks for numerous value creation cycles. Therefore, transitioning to CBMs may require systemic changes at multiple levels and stakeholder collaboration.

Our research suggests that procurement functions may experience barriers to support the adoption of CBMs due to a lack of awareness and interest from stakeholders, such as society and customers. The absence of requests for circularity could also be linked to the lack of knowledge, and the public's general awareness of the CE concepts. These findings align with Lieder and Rashid's (2016) research, which emphasizes the importance of social awareness in the transition to CBM, as stakeholders are a crucial part of the circularity transition. However, procurement managers anticipate a rise in the need for sustainable practices and believe that CBMs can be employed to fulfill this emerging demand. In addition, if procurement functions anticipate a shift in market dynamics, engaging in CE practices early on could lead to great opportunities in the future. For instance, if new markets emerge encouraging the purchase of circular products, there is a likelihood that the demand for products or services which align with CE principles will increase. Therefore, it could be advantageous to make changes to procurement and overall business operations to manufacture products in accordance with CE principles at an early stage.

Our research suggests that a lack of consistent rules and regulations regarding CBMs is a barrier for institutions. This means that procurement functions still do not experience value in CBMs and

will not engage and innovate business models unless there is a specific requirement for it. While not all companies are likely to need laws and regulations as a prerequisite, our findings indicate that this can heavily influence companies in the manufacturing industry. This aligns with the discussion by Wang et al. (2023) and Homrich et al. (2018) on the need for better interactions among a wide range of stakeholders such as policymakers, society, and manufacturing businesses to establish systematic regulation and policy systems. Furthermore, market barriers and demand-related issues also play a significant role. A lack of effective regulatory systems can pose significant barriers to the adoption of CE initiatives. Figure 2 summarizes our main research findings.

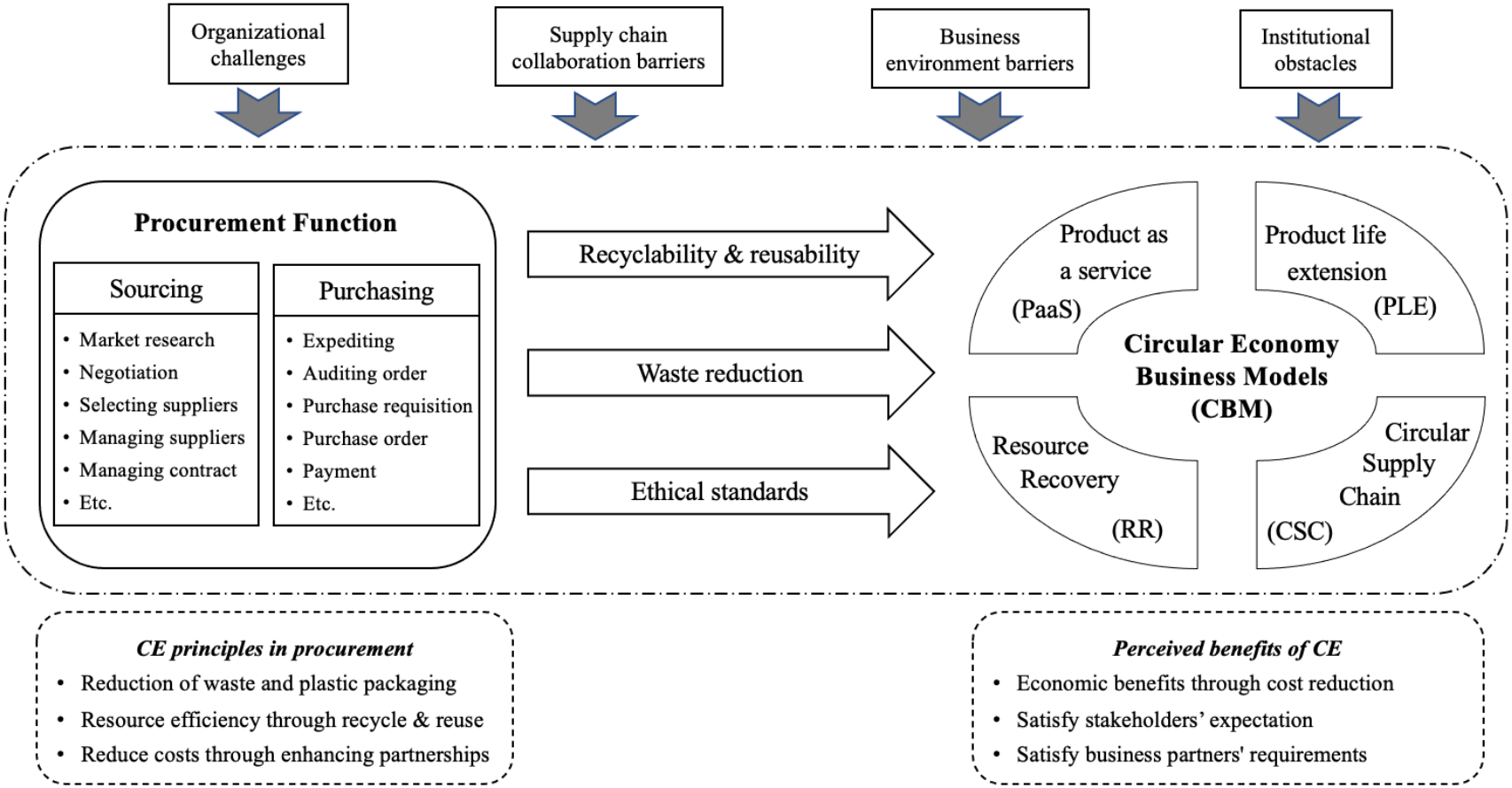

Figure 2. Contribution of procurement function in CBM

6. Conclusion

The objective of this study was to enhance comprehension and knowledge by examining the ways in which procurement can support the adoption and the development of the CBMs. Our study can be considered as a reaction to the demand for a more thorough examination of the role of the procurement function to support CBM implementation through recycling, reusing, and reducing resources. The research aim is addressed through examining (i) the contemporary understanding of CE in the procurement practices of Vietnamese manufacturing firm, (ii) the ways that the procurement function can facilitate the implementation of CE, and (iii) the challenges that the procurement function may experience during the implementation of CBM. To gain an understanding of these matters, a multiple-case study method was employed to explore the procurement and CE practices at four Vietnamese manufacturing businesses, thereby delivering both theoretical implications and practical contributions.

6.1. Theoretical contributions

This research adds to the existing literature on CE and procurement in three significant ways. Firstly, the study makes an incremental theoretical contribution by applying the theory of CE and CBMs to the procurement context. This enhances our comprehension of how companies view CE when it comes to procurement and highlights the procurement function's potential role in implementing CE and CBMs (Geisendorf & Pietrulla, 2018; Lahane et al., 2020; Neessen et al., 2021). Secondly, the paper identifies how the procurement function can contribute to the organization of CBM, as well as highlighting implementation barriers for the procurement function in supporting CBM in the context of Vietnamese manufacturing firms. Thirdly, this research has identified the main barriers to the implementation of CBMs from the perspective of the procurement function, thus, extending the literature of Vermunt, et al. (2019); Qazi & Appolloni (2022). This study also indicates that the encountered barriers may be linked to an organizational context and financial considerations, potentially explaining why the identified barriers differ from previous research (Mangla et al., 2018; Guldmann & Huulgaard, 2020). Moreover, our findings suggest that taking a wider supply chain perspective which looks beyond organizational boundaries is necessary to facilitate a systematic and comprehensive implementation of CBMs.

6.2. Practical implications

This paper offers several practical implications that are relevant to managers. Firstly, by investigating the contemporary understanding of CE and how procurement can support the transition toward CBM, it provides a starting point that can be used to develop practical approaches and guidelines for implementing CE in manufacturing businesses. Secondly, this research identifies possible factors that may affect how the procurement function can aid practitioners in

evaluating their own factors during the implementation of CBMs or how to assess its performance. Additionally, this research reveals a correlation between the procurement function and overcoming barriers in implementing CBMs, which is useful for managers and practitioners, as it implies that the procurement function must be considered when assessing the execution of CE within a company. Furthermore, recognizing obstacles raises consciousness about their intricacy and how they may be interconnected within, and outside categories and functions can facilitate senior managers in manufacturing businesses to adopt and develop CBMs successfully. Moreover, the insights into the settings of the organizational background, financial perspectives, and institutional aspects can assist practitioners in identifying the main challenges that organizations may face when implementing CBMs or becoming engaged in CE-related practices. Besides, our study is one of the first study that explores the procurement practices in Vietnam, which may become an important manufacturing base in the near future (Akbari & Ha, 2020). Lastly, the suggested conceptual framework improves our comprehension of how the procurement function can assist in executing CBMs. The framework can assist practitioners in creating suitable procurement actions and surmounting obstacles to achieve a high degree of procurement maturity, which can improve the capability of managing the intricacy of obstacles and thus facilitate the shift toward circularity.

6.3. Limitation and future research

Our study is not without its limitations. Firstly, the number of manufacturing businesses with perspectives from the procurement function was limited, so it is suggested that future research should include a larger sample size. To achieve this, a set of standardized survey questions relating to the procurement function could be established to gather more data across various industries, company sizes, and scopes. Additionally, the study's participants mainly consisted of senior managers and practitioners in procurement and supply chains in Vietnam, which limits its applicability to other countries. Therefore, it is recommended that future studies explore the role of procurement in supporting the implementation of CBMs in a broader regional or international context to challenge or support the findings of this study and to generalize the research results.

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Appendix 1. Interview protocol

i. The topics of inquiry including the respondents' comprehension, knowledge, and expertise in CE and CBMs, as well as the capabilities and operation of their procurement function within their organization;
ii. An examination of their perception of sustainability in a procurement context, as well as the relationship between procurement and the company's strategies and other functions;
iii. A discussion of the role of procurement in product idea, development, and sustainability practices;
iv. An examination of the challenges associated with implementing CE and developing CBMs within the company's procurement function, along with the benefits envisioned by the informants for their implementation;
v. Finally, an investigation of the interviewees' thoughts on the importance of sustainable procurement actions and why they believe they are significant.