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Challenges to the Innovation of Circular Business Models: A Four Case Study of South African Companies

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Abstract

The refurbishing and recycling of end-of-life products are the foundation of circular business models (CBM), which have the potential to drastically cut costs and have a large positive impact on the environment. CBMs, which reflect the emergence of a circular economy, have proven slow to catch on within organizations. The purpose of this research is to define the interactions that impede the adoption of CBM in order to enhance glitch prevention and a quicker clearance. In four case studies of the circular business model innovation (CBMI) process in South African enterprises, the study covers a cross-case comparison of start-ups and incumbents with varying sizes and client fragmentation. Further data suggests that CBMI contacts are widespread across all socio-technical levels, despite major organizational obstacles. The type of connections and the number of contacts vary significantly amongst the case studies, though. The findings also indicate that other elements, such as organizational size, industry, and consumer segment, influence the nature of relationships made. More interactions that were not previously noted in earlier investigations are revealed in the current study.

Keywords

Circular Business Model, Business Model Innovation, Circular Economy, Customer Fragments, Product Refurbishment, Recycling Systems.

Introduction

Circular business models provide a more reliable approach for businesses to cost-effectively increase their respective means of production (CBMS). Businesses that have demonstrated cost-effective levels and production proficiency from product-service schemes with recycling, support the idea that material and energy reductions of more than 80% might become a reality (Santa-Maria et al., 2022). There are various indicators that indicate the necessity of business model improvements for companies to fully benefit from recycling and environmental product advances (Lin et al., 2020). The circular economy (CE) idea has received a lot of support as the best alternative to the generally accepted linear economy and as a means of accelerating the necessary transition to sustainable development. However, the obstacles associated with a switch to CBMs and the entrepreneurial stage implementation of a circular economy are still largely unexplored (Dagevos & Lauwere, 2021), resulting in a lack of information and working models for advancements of circular business model innovation (CBMI) (Bigliardi & Filippelli, 2021). The adoption of CBMs and the transition to a sustainable future have lagged, respectively. (Guldmann & Huulgaard, 2020).

A thorough investigation of the variables limiting CBMI activities in companies is an important first step in educating researchers, practitioners, and decision-makers, so they can come up with creative solutions to address the problems and fast encourage the adoption of CBMs (Guldmann & Huulgaard, 2020).

The purpose of the current study is to add to the existing body of knowledge regarding the research subject. What obstacles must South African businesses overcome in order to enter CBMIs? This is accomplished by highlighting two important gaps in the prior research that are consistent with the current study topic. The few CBMI-examined papers in the prior research are noted as being primarily based on unique organizations (Nußholz et al., 2019). There appears to be a huge gap in research focused on several case studies among businesses organized according to their product lines (Bolton & Hannon, 2016).

By using experimental work based on four case studies including organizations of various sizes, this study seeks to fill the gap that does exist in the prior research. Since there appears to be little study solely based on the challenges of CBMI to date, previous studies based on the challenges of CBMI have concentrated on referring studies that are closely related to the issues of CBMI and generally from other research topics (Guldmann & Huulgaard, 2020). Therefore, it is yet unclear whether the difficulties identified in these closely linked investigations are comparable to those encountered, notably in CBMI. This study tries to close this gap by examining how issues from earlier studies that focused on sustainable innovation relate to those that are largely related to CBMI.

The rest of this research work is structured as follows. Section 2 presents the fundamental theoretical concepts. In Section 3, the methodological procedure is discussed. Finally, Sections 4 and 5 present empirical study and review of the challenges associated with CBMI and the comparisons derived from the current research. The study's conclusion is stated in Section 6.

Theoretical Background

1. *Circular Business Models*

An organization's daily business operations can be determined by its functional business model (Sebastian et al., 2020). A business model is also thought of as the structure of the company (Ferasso et al., 2020). Gebauer et al. (2020) documents that at least three key elements — value proposition, organizational clientele, and the type of service we provide to them— constitute the framework of a business model; to be able to deliver this value proposition to our clients in a timely manner, we value design and transmit how we are structured; the profit financial equation (value capture system) shows how the organization makes money and other aspects of its economy.

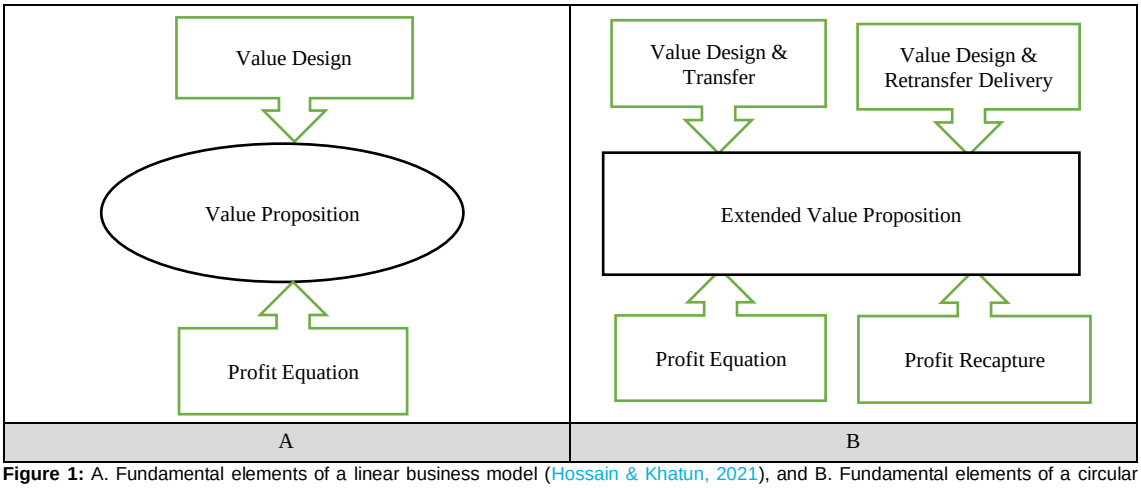

Figure 1: A. Fundamental elements of a linear business model (Hossain & Khatun, 2021), and B. Fundamental elements of a circular business model (Nussholz, 2018).

In consideration of the classical linear business model, these create economic value for the proprietors in the value chain (i.e. the business unit and stakeholders, relevant suppliers and its clientele) (Antikainen & Valkokari, 2016). However, models that represent sustainable businesses have a wider point of view on value and its partners (Bocken et al., 2019).

A CBM is a good example of a typical business model that can be regarded as sustainable (Sekoboto & Manzanai, 2022) and incorporates both environmental and economic value design, through the transformation of the entrepreneurial logic from creating income by the one-time sale of commodities, producing income through a routine flow of refurbished material and products over time.

Redevelopment of the business model in order to incorporate CBM fundamental elements — that is, value design and transfer, value retransfer, and an extended value proposition—, permits an organization to streamline the value design and enables a company to align the value creation reasoning with circular business principles; adequate results are only possible when all efforts are made to institute all these elements in the organizational operations (Bocken & Antikainen, 2018).

2. *Circular Business Model Innovation*

The term circular business model innovation can loosely be understood as an attempt to suggest and adopt adjustments within an already existing business model in an organization or rather creating a new business model altogether to transfer, create and capture value in new approaches for mature businesses or start-ups (Stål & Corvellec, 2018).

Employing a wider understanding, CBMI in already existing organizations can be looked at as a way of redeveloping or a change of an available linear business model to incorporate CBM fundamental elements which entail value redesigning, retransfer, and profit recapture as well as an extended value proposition. For start-ups, CBMI can be viewed as an approach of coming up with a CBM established on the CBM elements from the initial stage.

Innovation in business models is difficult to achieve (Teece, 2018) and differs from more well-known innovation kinds including product and process innovation (Snihur & Wiklund, 2019). A company's traditional value creation logic, locked-in management structures, resource allocation, and other factors can substantially impede the innovation process since they frequently lack the tools and business processes necessary to deal with this kind of innovation (Chesbrough, 2010). Such difficulties are particularly apparent in CBMI, where not only the aforementioned issues but also a paradigm shift from a linear economic knowledge to a systemic, circular economic understanding, must be addressed in the innovation process (Geissdoerfer et al., 2018).

Additionally, innovative sustainable business models typically engage more stakeholders than their conventional linear counterparts (Reficco et al., 2021). Additionally, external co-development with current or new value chain partners is required due to the systemic nature of CBMs (Asgari & Asgari, 2021) and internally in the target organization, through cross-organizational cooperation. In order to create effective CBMs, collaboration inside the company is necessary among several divisions, including product development, manufacturing, sales, and after-sales support (Guldmann & Huulgaard, 2020).

A company-internal experiment can involve sketching out potential business model ideas on a business model canvas and analyzing the advantages and disadvantages of the concept (Lopez et al., 2019). Examples of outside experiments include customer interviews, and creating and testing a prototype with a reliable source (Bocken et al., 2019). The goal of the experimentation is to develop potential CBM configurations, or concepts for CBMs, and to get feedback on what will and won't work in various business contexts. The new company model is then gradually modified with this knowledge included (Santa-Maria et al., 2022).

The specific company environment will determine how the CBMI process will play out in detail (Santa-Maria et al., 2022), however, the procedure will frequently involve a keen eye for business opportunities, the creation of numerous CBM concepts, experiments that evaluate the validity of some of these notions, as well as further research and refinement of some of these concepts (Linder & Williander, 2017).

Methodology

Research Design

The empirical study of CBMI hurdles was structured as a longitudinal, multiple-case study and was planned as exploratory action research. In action research, the researcher actively participates in initiatives meant to promote change at the individual, organizational, and societal levels while keeping an eye on and reporting the processes as they develop (Coghlan, 2019). The collaboration in this research aimed to promote and support continuous experimentation in the case of companies' CBM development. The CBMI process in the companies served as the subject of study, and this research design enabled the researchers to thoroughly assess the CBMI process as it developed and to gather rich data regarding the obstacles that were faced (Guldmann & Huulgaard, 2020).

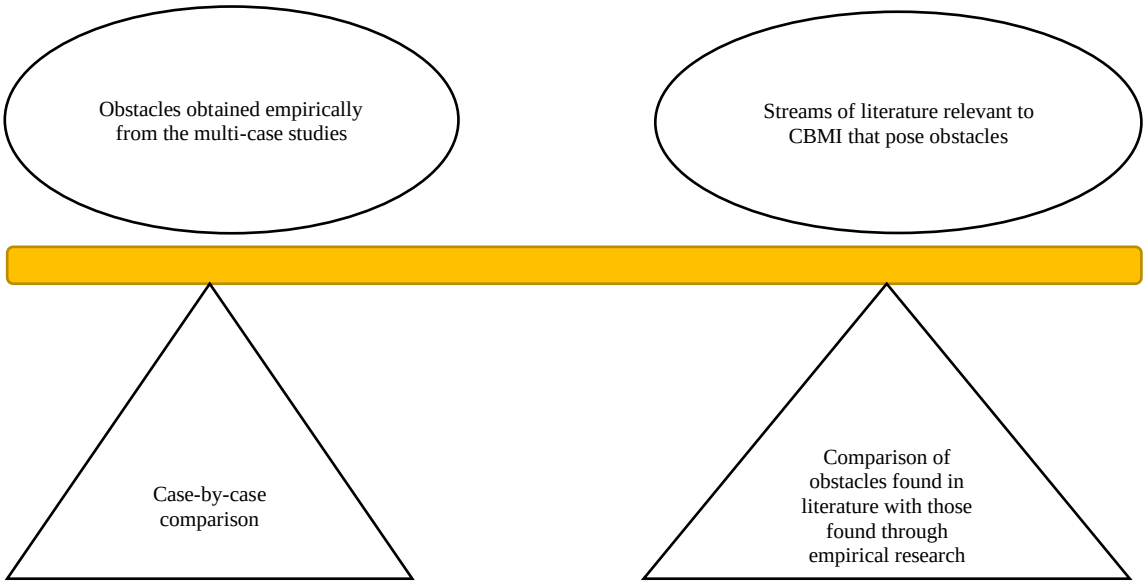

Figure 2: Overview of the many components of the study and their relationships.

Researchers and case firms worked together to complete the CBMI. The cooperation was built up in a flexible way that let the businesses choose which business sectors to concentrate on, how quickly the CBMI process would move along, and which stakeholders to include. In some instances, the researchers would assist in directing the CBMI process and make recommendations for the following phases, including which stakeholders to involve, how to do so, and what technologies to use. In other instances, the researchers primarily acted as an ally to assist the businesses' own endeavors.

The top-left picture in Figure 2 depicts the present empirical study that produced the study's initial finding, which is a case-by-case evaluation of the four case firms. The empirical investigation, along with our analysis of the literature, as indicated in the top right corner of Figure 2, leads to our second finding, which is a comparison of the barriers that are obtained empirically and the obstacles that are discovered in the literature.

A Review of CBMI Obstacles

In order to find CBMI hurdles in the literature, a literature review was done as part of this study. The term *circular economy* was combined with the phrase's *barrier* or *challenge* in a Web of Science search as a first step. These general phrases were chosen in order to include as much pertinent literature as feasible while acknowledging the lack of terminology convergence between the CBM and CBMI domains. A total of 198 articles in English that were published before 2020 were found after the search, and those that dealt explicitly with difficulties in implementing CBMs in South African businesses or in the context of South African industries were given closer examination. Only four publications overall showed relevance to the CBMI setting, and only one of them was important for the literature assessment on barriers to CBM adoption in South Africa (Ohiomah & Sukdeo, 2022).

Case Selection Criterion

In a significant research endeavor involving four researchers from two distinct research groups, the case companies for the four-case study were chosen from a group of ten businesses. Instead of using a random or stratified sample for case study research, it is usual to pick cases using particular criteria (Denscombe, 2017). In this research, firms were selected based on;

- The company dealt in wholesale sales or manufacture, either in-house or through an outside vendor, meaning it sold goods whose designs it had complete control over.
- The writers had either collaborated directly on the research project with the corporation or had access to thorough knowledge about the CBMI procedure through fellow researchers in the authors' research group.

The last four case companies were made up of circular start-ups and linear incumbent businesses of various sizes and industries, namely the textile, mechatronics, furniture, and machinery, which catered to various consumer groups (Table 1). In order to conduct a case-to-case study, the companies were split into two categories based on their size and age. Companies C_A and C_B, which are start-up businesses with less than three years of existence, made up the first group. The second category included micro-businesses that were older than three years and had fewer than 10 employees, i.e., companies C_C and C_D.

Table 1: *Overview of case organizations.*

Case Organization	Type of Business	Customer Base	Industry	The Duration of the CBMI Partnership	Hosted Gatherings and Workshops
C_A	Start-up	Consumer	Textile	2 years	5
C_B	Start-up	Business	Mechatronics	1 year	5
C_C	Micro	Consumer	Furniture	11 Months	7
C_D	Micro	Business	Machinery	2 years	9

Data Collection

The length of the partnership with the case companies varied from three months to two years, depending on each company's goals. The researchers' interactions with the businesses included face-to-face meetings, phone calls, and email correspondence with specific contacts as well as working sessions and workshops with several company stakeholders. Through participant observations and unstructured interviews done during encounters with the companies, information on the hurdles that were encountered was gathered. These data sources were augmented by a document analysis of official papers, such as sustainability reports and corporate websites, and in some cases, semi-structured interviews with important internal and external stakeholders to enable data triangulation. In addition to interview transcripts, field notes, and memos that were maintained in a case study database, case study data was also recorded in meeting minutes that were distributed to the companies (Jentoft & Olsen, 2019).

Data Analysis

An inductive method was used to assess the empirical data, and for each organization, a list of obstacles was initially determined. Several different sources of data were triangulated to get the list of obstacles (Jentoft & Olsen, 2019). The four researchers who conducted the research in the four case firms compared and reviewed the individual company lists, using a technique known as investigator triangulation (Jentoft & Olsen, 2019; Rashid et al., 2019). Similar-type obstacles were collected together under one title and arranged into obstacles under the emerging categories of market and institutional obstacles, value chain obstacles, organizational obstacles, and employee-level obstacles. In order to discover any potential similarities, the number and types of barriers encountered by each organization across company size were analyzed, industry, and client group for the purposes of cross-case analysis.

The literature was classified into two categories: internal and external conditions-related barriers. Both direct comparisons and similarly comparable problems were looked for when comparing barriers from the literature with empirically produced obstacles. In Table 5 and Section 5, it is compared how barriers identified through empirical research and those stated in the literature.

Discussion of results from the empirical study

Beginning with a summary of the process outcome of each of the four case organizations' collaborations in Section 4.1, this section gives the findings from the empirical portion of the study. A comprehensive list of the obstacles faced by the case companies is presented in Section 4.2.

Process Result

The innovation processes led to the creation of numerous CBMs for closing resource loops in all of the organizations, as well as the improvement of these business model concepts. Generally speaking, the generated CBMs were not put into use throughout the research cooperation. On the other hand, in start-ups C_A and C_B, which had already started using CBMs before the research cooperation, during the research project, the already-existing CBMs were improved upon and put into practice, and a small-scale CBM was established at firm C_D. Table 2 provides an overview of the primary findings of the CBMI process for the case companies.

Table 2: *The results of the CBMI procedures.*

Case Organization	
C_A	A system for clothing returns that is internally run. When the partnership started, a CBM based on peer-to-peer resale of garments that would increase product consumption and lengthen product life was in the testing phase.
C_B	Extension of product life through new product designs, small-scale take-back program deployment, remanufacturing, and resale.
C_C	To increase product life, redesigned bedding products were gradually introduced into new markets.
C_D	Remanufacturing and reselling that prolong product life are combined with new product designs and small-scale deployment of take-back programs.

List of Obstacles Determined by Empirical Data

The hurdles that were found during the CBMI process in the four case organizations can be divided into internal barriers at the organizational and personnel levels and external barriers at the market, institutional, and value chain levels. The barriers are noted in Table 3's left column and are detailed in Subsection 4.2.1.

Table 3: *Overview of observed impediments across cases.*

Size	Start-up	Start-up	Micro	Micro
Industry	**Textile**	**Mechatronics**	**Furniture**	**Machinery**
Case organization	**C_A**	**C_B**	**C_C**	**C_D**
Market and Institutional Level				
Regulatory obstacles				
Money for CBMs being difficult to get by				
Market demand is ambiguous				
Ineffective sustainability-focused public procurement practices				
Value Chain Level				
Investments in the value chain and current industrial facilities				
Concerns regarding the quality of returned items Fears regarding the constancy of the flow of returned items				
Several, intricate value chains				
Organizational Level				
Narrow focus of existing sustainability strategies				
Difficulty attaining management buy-in				
ROI and similar requirements for new business ventures				
Cannibalization concerns				
Individual/Employee Level				
lack of familiarity with CBMs and the circular economy				
A cautious strategy for advancing the circular economy agenda				
Linear business model structures and concepts currently in use				
Linear business models are supported by an incentive system.				

1. *Institutional and Market-Level Obstacles*

An example of a regulatory obstacle is the taxation of labor (rather than raw materials), which makes labor-intensive reuse, repair, upgrading, remanufacturing, and recycling activities more expensive than the production of new goods. Recaptured items are restricted in their handling and transit, particularly across borders, when they are classified as waste, to give another example. Organizations were not highly motivated to use recycled materials due to taxation and market frameworks, due to the fact that virgin raw materials are practically affordable and are seen to be simpler to manage in the manufacturing system because of their more uniform quality and reliable supply.

Money for CBMs is difficult to get by. Financial institutions, for example, were hesitant to fund the creation and implementation of a CBM in a start-up C_A, and small organizations were unable to secure funding from the public environmental innovation fund for the purpose of proving the CBM's viability in the market. This was due to the fact that the funds were mostly allocated for the creation of clean-tech solutions, as opposed to the proposed CBM, which would test novel customer engagement strategies and provide services to slow resource loops. The lack of finance options is probably related to the ambiguous market demand for CBMs, which was a key worry for the case companies. Although circular economy-focused public procurement policies might help businesses who sell to the government with this problem, the studied public procurement policies were typically more concerned with cost than sustainability.

2. *Obstacles at the Value Chain Level*

Some of the incumbents have problems with investments made in value chain setups and already-existing production facilities.

Building new infrastructures, which might potentially take business away from the established, lucrative setups, was seen by the case companies as being unattractive because it would take a lot of time, money, and effort to build the existing ones. Additionally, the companies were concerned with how to guarantee a high standard of output from the product life extension operations as well as the regularity of the flow of returned goods or reused materials. For many of the example organizations, establishing new circular systems was a challenging endeavor due to the globally, culturally, and extremely distributed nature of the value chains.

In many instances, the case organizations were reluctant to include customers and other members of the value chain in the creation of CBMs, and it appeared that there had been little prior experience working together in this way.

3. *Obstacles the Organizational Level*

Existing sustainability policies within organizations that had a restricted focus on things like product energy efficiency impeded the growth of CBMs and the adoption of the circular economy idea. The main cause was that, on several occasions, large corporations in particular appeared to be stuck in outdated sustainability concepts. In the case organizations, it was necessary to shift the sustainability strategy's emphasis and allocate resources to CBM growth; nevertheless, in some of the companies, the company contacts found it difficult to secure the necessary management support for these adjustments.

Many of the case firms were concerned about the financial viability of CBMs. First, historically, business investments have been based on metrics like payback time, return on investment (ROI), or something similar. However, compared to linear business models, CBMs operate on various timescales and have different financial structures and hazards (Hoffman et al., 2022), and frequently, if not immediately, are unable to satisfy the ROI requirements that linear business models fulfill.

4. *Obstacles at the Employee Level*

Although these experiences were often not characterized as CBMs, several case organizations had prior experience with the principles of the circular economy, for as from experience with items made of recyclable materials. These experiences served as an excellent springboard for the adoption of the circular economy and CBMs inside those businesses. However, when the research partnership started, the majority of the case organizations were not familiar with the concepts of the circular economy and CBMs, and their ignorance of these concepts served as an initial obstacle to the CBMI process.

Employees in some of the case firms had a hard time navigating the current organizational structures and values, which were heavily impacted by linear business model thinking. Employees proved to prefer working from the well-known linear company design and implementing circular economies in manageable increments. At the staff level, it was also discovered that an incentive system based on linear business model values and business-as-usual operations, such as rewarding sales volume rather than service contract agreements, was problematic.

Results and Analysis of the Literature and Empirical Data Comparison

The findings of the literature review are presented in this section. The objective of the literature review is to assemble a thorough list of CBMI obstacles described in CBMI-related streams of literature and compare this with the barriers seen in the four case organizations to examine differences and similarities between the two lists.

Innovation Challenges for Circular Business Models as Mentioned in the Literature

Table 4 lists the obstacles discovered by studying the literature on sustainable innovation. 12 external and internal barriers were found in the review of the literature.

Governmental obstacles like legislation, funding, infrastructural, and procurement obstacles are examples of external barriers. External impediments can include barriers connected to value chains and other stakeholders. There are consumer-related restrictions as well as technological ones, such as those caused by fashion fads. The internal impediments include things like unclear business cases, difficult product designs, and a lack of managerial support, knowledge, resources, and incentive structures.

Table 4: *Literature-based obstacles to the innovation of circular business models.*

External Obstacles	References
1. Absence of clear, comprehensive, and rigorous legislation	Merli et al., (2018)
2. There is no government assistance in the form of funds, law, or training. Lack of a clear place to go for assistance and lengthy certification etc. processes.	Merli et al., (2018)
3. Ineffective public procurement regulations	Bao et al., (2019)
4. Because labor is taxed more heavily than raw materials, labor-intensive reuse and recycling activities become more expensive.	Kazancoglu et al., (2021)
5. Laws that prohibit the sale of garbage and the cross-border transportation of products for reuse are examples of laws that hamper CBMs.	Guldmann, & Huulgaard, (2020)
6. Laws governing warranties prevent the use of recycled spare parts	Bressanelli et al., (2019)
7. Lack of chances for outside finance	Bao et al., (2019)
Internal Obstacles	**A Few References**
8. The commercial case for CBMs is unclear. The time to market is also thought to be prolonged by including environmental factors in product and business model design.	Lüdeke-Freund et al., (2019)
9. Fears that rising sales of products that have been repaired, refurbished, or remanufactured could result in a decline in sales	Desing et al., (2020)
10. To achieve circularity, product design should adhere to particular rules, necessitating the redesign of previous items.	Hopkinson et al., (2018)
11. Insufficient commitment from the top	Bao et al., (2019)
12. Lack of understanding of the advantages of the circular economy, which includes remanufacturing and recycling, within the company	Bocken et al., (2016); Bao et al., (2019)

Comparing Observed Barriers and Barriers from the Literature

In Table 5, the obstacles from the CBMI-related literature are compared to the obstacles from the multiple-case study to look at how they differ and overlap.

The table demonstrates that the CBMI obstacles found in the case firms largely line up with those found in the CBMI-related literature, despite the apparent obstacles, there is a reluctance to include outside parties in CBMI initiatives; there is no clear analogy in the examined literature for the challenges in fostering cross-organizational collaboration and the cautious approach to advancing the circular economy goal. However, they are all more generally related to a number of obstacles, which refer to the requirement for a fundamental change in company culture and market participation as well as resistance to this change.

An explanation for why these collaboration-related hurdles were found in the current study but not in earlier research, is that the responsibility for integrating the CBMI process into the larger organization rested with each individual firm contact, against the more common scenario where management introduces CBMI. Unsupportive management, paired with numerous other obstacles, indicated that both the organization contacts and the other employees engaged saw marketing CBMs as a risk to their careers. Due to this circumstance, it was challenging to develop the internal and external collaboration required to advance the CBMI process.

Table 5: *Obstacles linked to observed CBMI and those from the literature.*

Obstacles in the Four Case Studies	Obstacles from Literature
Market and Institutional Level	
Regulatory obstacles	5,6
Money for CBMs being difficult to get by	2
Market demand is ambiguous	3,8
Ineffective sustainability-focused public procurement practices	11
Value Chain Level	
Investments in the value chain and current industrial facilities	7,1
Concerns regarding the quality of returned items Fears regarding the constancy of the flow of returned items	3,2 8
Several, intricate value chains	
Organizational Level	
Narrow focus on existing sustainability strategies	11
Difficulty attaining management buy-in	4,8
ROI and similar requirements for new business ventures	11,7
Cannibalization concerns	
Individual/Employee Level	
lack of familiarity with CBMs and the circular economy	11,4
A cautious strategy for advancing the circular economy agenda linear business model structures and concepts currently in use	10 10,8
Linear business models are supported by an incentive system.	12,7

Conclusion

What obstacles do businesses face when participating in CBMI? was the aim of this research. The goal was to investigate two gaps in the body of knowledge. The first flaw was that the scant CBMI studies on obstacles tended to concentrate on the analysis of individual situations or particular organizations, while a more comprehensive viewpoint is typically absent. To fill this gap in the literature's coverage, the study included a thorough four-case study involving start-ups, reputable companies, and different industries, to provide a wide and deep empirical foundation for the analysis of barriers, consider firm sizes and client categories, then start to recognize the parallels and discrepancies among businesses in these categories.

According to the assessment, most businesses encountered obstacles at each of the four socio-technical levels (Table 3). Especially, as the sole category of businesses, circular start-ups that embraced CBMs when the company was created did not have obstacles at the employee level.

Comparing businesses of the same size, in the same sector, and catering to the same consumer base revealed that these businesses faced various obstacles. This indicates that obstacles a company faces during the CBMI process depend on criteria other than size, industry, and client segment. The premises for CBMI and the sort of CBM that the company explores or implements were considered as variables that could potentially affect the hurdles that are encountered.

The second gap assessed in this study was that present research on CBMI obstacles does not exclusively rely on newly published research, nevertheless, more on allied literary genres in the area of sustainable innovation. Examples include green supply chain management and product-service systems that might not fully capture CBMI obstacles.

Comparing the experimentally generated obstacles from the specific CBMI examples in our four case studies with the barriers from the literature linked to CBMI allowed us to evaluate this gap. The comparison revealed that the obstacles largely agreed upon, and the larger body of research on obstacles to sustainable innovation thus appears applicable to the particular subject of CBMI. Nevertheless, the mapping of experimentally derived obstacles from the four example companies identified critical obstacles that were not discussed in the reviewed literature.

Investments in current production facilities and value chain are two of these four obstacles; external stakeholders are reluctant to participate in CBMI initiatives, and cross-organizational collaboration is difficult to create; and taking a cautious attitude to advance the circular economy agenda, add helpful items to the literature's list of obstacles.

The examination of barriers across four South African example companies, which include circular start-ups and linear incumbents as well as various company sizes, industries, and client groups, is the main contribution of this work to the research field. It also makes a contribution by gathering barriers that have already been discussed in the literature and by highlighting fresh, empirically supported CBMI hurdles that have not yet been published. The study offers managers and other practitioners a more thorough and supported list of hurdles that can assist proactive and effective CBMI circumvention and possibly hasten the adoption of CBMs.

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