

# **CIRCLE Framework: Navigating the Trade-off Between Sustainability and Profitability in Circular Business Transitions**

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## Abstract

This thesis investigates how companies navigate the financial trade-offs between sustainability and profitability during their transition from linear to circular business models (CBMs). The research highlights that while CBMs offer long-term opportunities for cost savings, new revenue streams, and risk mitigation, they also pose short-term financial challenges such as high upfront investments, uncertain returns, and limited access to tailored financing. These trade-offs are influenced by contextual factors including firm size, sector, regional regulatory support, and organizational capabilities.

To address these complexities, this study introduces the CIRCLE Framework, a six-phase model (Consider – Identify – Redesign – Calculate – Launch – Evaluate) that guides firms in planning and implementing circular transitions. The framework builds on and extends existing theories such as the Triple Bottom Line, Resource-Based View, and Institutional Theory by integrating financial feasibility, organizational size, and regional conditions.

A systematic literature review forms the foundation of this thesis, synthesizing findings from 31 academic sources to identify key financial barriers and drivers in CBM adoption. It reveals that while large firms can leverage scale and innovation resources, SMEs can benefit from agility and niche market positioning, provided they access supportive policy measures and financing instruments.

The thesis concludes that successful CBM adoption requires firms to balance short-term financial strain with long-term strategic benefits through innovation, stakeholder collaboration, and policy alignment. The CIRCLE Framework offers a practical tool for managers, financial planners, and policymakers to operationalize circular strategies and foster financially viable sustainability transitions.

## Keywords

Circular Business Models

Sustainability Transition

Financial Trade-offs

CIRCLE Framework

Systematic Literature Review

Resource Efficiency

Profitability in Circular Economy

Financial Barriers and Drivers

## Key abbreviations

CBM	– Circular Business Model
TBL	– Triple Bottom Line
SLR	– Systematic Literature Review
LCC	– Life Cycle Costing
PSS	– Product Service Systems
ESG	– Environmental, Social and Governance

# 1. INTRODUCTION

In an era of growing environmental awareness and intensifying resource challenges, businesses are increasingly called upon to align their economic goals with sustainable practices. This chapter introduces the urgent shift from linear to CBMs, highlighting the potential of CBMs to reduce environmental impact while enhancing long-term financial viability.

## 1.1 Background

In recent years, businesses around the world have faced growing pressure to embed sustainability into their operations (Thorley et al., 2022). The traditional linear business model defined by a "take-make-dispose" pattern, has played a significant role in accelerating resource depletion and environmental degradation (Jørgensen et al., 2018). An example is the fashion industry, which alone accounts for nearly 10% of global greenhouse gas emissions and approximately 20% of global wastewater production. Moreover, the average American household discards around 80 pounds of textiles annually, further highlighting the unsustainable nature of linear consumption (Igini., 2024).

In contrast, CBMs present a promising alternative by emphasizing resource efficiency, waste minimization, and extending product lifecycles (Ghisellini et al., 2016). These models aim to decouple economic growth from environmental impact, offering long-term sustainability benefits. However, while the environmental rationale for CBMs is well-established, many firms encounter difficulties in making the financial case for circularity. High upfront investment costs, limited access to financing, and uncertain return on investment (ROI) often act as substantial barriers (Aranda-Usón et al., 2019).

Despite these obstacles, companies that successfully adopt CBMs can gain competitive advantages through cost reductions, improved brand image, and the creation of new revenue streams, such as through remanufacturing or product-as-a-service strategies (Bocken et al., 2016). In support of this, the European Commission estimates that a 2% increase in resource productivity could create two million new jobs in the EU by 2030 (Hinton-Beales, 2020). Additionally, the circular economy is projected to increase European Union (EU) Gross Domestic Product (GDP) by approximately 0.5% by 2030 compared to a baseline scenario without circular policies (Cambridge Econometrics, Trinomics, & ICF, 2018, p. 38).

## 1.2 Problem Statement

Financial viability of CBMs remains complex and varies significantly across industries. Measuring success is challenging, as it depends not only on direct cost savings or revenue growth, but also on long-term value creation, resource efficiency, and risk reduction. Factors such as consumer behaviour, collaboration between stakeholders, and government regulations all influence how effectively a business can transition to a circular model (Bjørnbet et al., 2021). As more businesses recognize the need to adopt sustainable practices, gaining a clearer understanding of the financial dynamics and performance metrics associated with CBM adoption is crucial to ensuring both long-term economic sustainability and environmental responsibility.

## 1.3 Knowledge Gap

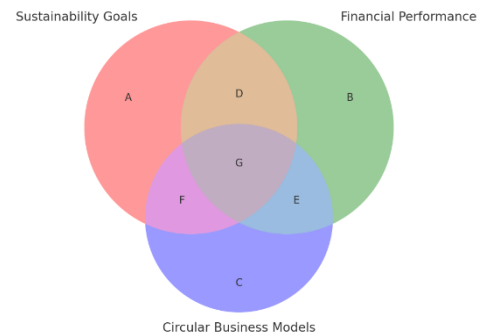
Despite the growing interest in CBMs, significant gaps remain in understanding how companies navigate the trade-off between sustainability and financial profitability. The comprehensive sustainability problem we face encompasses numerous social, governmental and environmental challenges, making the transition from linear to circular models a necessary shift (Jørgensen et al., 2018).

However, existing literature often frames the transition to CBMs either as an environmental imperative (Walzberg et al., 2021) or a broad economic opportunity (Sarmento et al., 2022), without sufficiently exploring how firms strategically balance the pursuit of sustainability goals with the need to maintain or enhance financial performance. There is a lack of a structured, literature-based analysis that evaluates the financial complexities businesses face when making this transition.

A major gap in the literature concerns the key financial drivers and barriers affecting profitability in CBMs. While some studies highlight cost savings from resource efficiency and waste reduction (Genovese et al., 2015), others emphasize financial obstacles such as high upfront investment costs, uncertain returns, and increased operational costs (Baldassarre et al., 2023). However, these discussions remain dispersed across various disciplines, lacking a comprehensive evaluation of the financial factors that most influence sustainable and circular transitions across industries. A structured review of existing literature is needed to identify and assess financial enablers and barriers that shape CBMs. This provides insight into how businesses navigate financial risks while striving for long-term economic and environmental sustainability.

In addition, there is growing recognition that firm-level financial performance is influenced by CBM adoption (Bocken et al., 2016). However, existing research lacks a comprehensive analysis of how and under what conditions companies achieve financial success in these transitions (Ghisellini et al., 2020). Some firms benefit from new revenue streams through remanufacturing, product-as-a-service models, and extended product lifecycles (Bjørnbet et al., 2021), while others struggle with supply chain inefficiencies and technological barriers (Korhonen et al., 2018). However, there is no clear synthesis of these findings to determine which financial strategies lead to successful CBM implementation, and which factors contribute to financial underperformance.

Figure 1 (Venn diagram) clearly illustrates the research gap:



**Figure 1: Research gap: Financial strategies in circular business models.**

Legend:

A	Environmental Benefits
B	Financial Challenges
C	Business Model Innovation
D	Sustainability vs Profitability Trade-offs
E	Financial Enablers & Barriers in CBMs
F	Circular Economy Strategies & Performance
G	<b>Research Gap: Key Financial Strategies for Successful CBM Implementation</b>

## 1.4 Research Objective and Questions

This research explores the trade-offs between sustainability and financial performance in companies transitioning from linear to circular models. Specifically, it investigates how firms navigate financial challenges while integrating circular strategies and identifies the key financial drivers and barriers influencing profitability. Moreover, it examines the impact of circular

transitions on firm-level financial performance, highlighting the critical factors that determine success.

By conducting a qualitative content analysis of academic literature and examining multiple case studies through comparative analysis, this study aims to provide insights into how businesses can effectively manage the financial risks and opportunities associated with circularity. A semi-structured interview with an industry practitioner is also employed to capture practical perspectives and validate theoretical findings.

Main Research Question:

- How do companies navigate the trade-off between sustainability and financial profitability when transitioning to CBMs?

Sub-questions:

1. What are the key financial drivers and barriers affecting profitability in companies adopting CBMs?
2. How does transitioning from linear to circular business models affect firm-level financial performance, and which factors are critical for success?

## 1.5 Academic and Practical Relevance

By addressing these objectives, this study contributes to bridging the knowledge gap in CBM financial performance by synthesizing fragmented literature and offering a structured framework that clarifies how firms navigate the balance between sustainability and profitability. It advances academic understanding of financial drivers, barriers, and firm-level outcomes in circular transitions, while also providing practical insights for industry stakeholders. The findings aim to support more informed strategic decision-making, ultimately enabling companies to pursue economically viable and environmentally responsible business practices and contributing to a more resource-efficient and profitable business landscape.

## 2. THEORETICAL BACKGROUND

CBMs aim to minimize waste, optimize resource efficiency, and extend the lifespan of products (Ferasso et al., 2020). While these models support both environmental and economic sustainability, businesses often encounter financial difficulties when shifting from traditional linear models to circular approaches. Organizations must carefully weigh sustainability objectives against profitability goals, taking into account both the costs and potential financial benefits linked to CBM adoption.

To better understand how companies manage these financial hurdles, it is essential to examine several core financial concepts tied to circular transitions. These include financial risk, cost efficiency, revenue opportunities, and the influence of regulatory frameworks. This chapter highlights these key areas and discusses their significance within the context of circular business strategies.

All financial concepts covered in this chapter are presented as working definitions, developed through the synthesis of multiple sources and grounded in academic literature.

### 2.1 Financial Risk

Embracing CBMs introduces financial uncertainty, including high upfront investments, unpredictable returns, and the need for continuous innovation (Frishammar et al., 2025; Eisenreich et al., 2022). Companies must evaluate whether the long-term economic benefits justify these risks. Prior research indicates that investing in circular strategies may lower financial exposure by reducing reliance on scarce resources and avoiding future regulatory costs (Aranda-Usón et al., 2019) (Baldassarre et al., 2023) (Kanzari., 2023).

### 2.2 Capital Expenditures

The shift to CBMs generally requires considerable capital investment (Aguilera-Caracuel et al., 2013; Frishammar et al.,

2025). This includes funding for new equipment, technologies, infrastructure, and product or process redesigns that support circularity. While capital expenditures may act as a barrier, they are also a critical enabler for long-term business transformation. Firms must assess the magnitude and strategic value of these expenditures in relation to their sustainability and profitability goals (Aranda-Usón et al., 2019) (Baldassarre et al., 2023) (Aguilera-Caracuel et al., 2013) (Kumar et al., 2024).

### 2.3 Payback Period

The payback period is a key financial indicator that calculates the time required to recover the initial costs of CBM investments (Thorley et al., 2022; Ghisellini et al., 2020). Businesses tend to prefer shorter payback periods, especially when operating under financial constraints. Circular strategies that offer rapid returns, such as reuse and repair programs, can demonstrate shorter payback horizons and help build momentum for broader circular adoption (Aranda-Usón et al., 2019) (Kumar et al., 2024).

### 2.4 Cost Savings and Efficiency

One of the major financial incentives of CBMs is the potential for lowering operational costs (Baldassarre et al., 2023). By streamlining resource use, cutting down on waste, and reducing material dependency, companies can benefit from cost reductions and long-term savings. For instance, closed-loop supply chains are known to lead to reduced production costs and enhanced efficiency over time (Kanzari., 2023) (Ghisellini et al., 2020).

### 2.5 Revenue Generation

CBMs enable the development of new revenue models, such as remanufacturing, product-as-a-service, and second-hand marketplaces. Companies that successfully integrate these models can unlock additional financial value while staying committed to sustainability principles. Evidence suggests that circular revenue streams may improve long-term profitability and competitive positioning (Kanzari., 2023) (Jørgensen et al., 2018).

### 2.6 Regulatory and Market Influence

External forces, including regulations and consumer behaviour, strongly influence CBM adoption. Government policies like Extended Producer Responsibility can incentivize circular practices, though they may also impose added compliance costs. At the same time, growing consumer awareness of sustainability issues can drive demand for circular products, directly affecting financial performance (Hawkins., 2006).

### 2.7 Balancing Sustainability and Profitability

Although CBMs present promising financial benefits, achieving a balance between profitability and sustainability remains a complex challenge. Businesses must integrate circular practices without undermining their financial health. While some firms leverage regulatory incentives or benefit from consumer loyalty, others encounter barriers such as operational complexity or high investment thresholds. Understanding the financial dynamics of CBMs is key to crafting viable circular strategies (Lewanandowski., 2016) (Jørgensen et al., 2018) (Hawkins., 2006).

## 3. SYSTEMATIC LITERATURE REVIEW METHODOLOGY

The Systematic Literature Review (SLR) method is a structured approach to identifying, evaluating, and interpreting available research relevant to a particular research question or topic area. This method allows researchers to gain a comprehensive understanding of prior work and identify gaps for future

exploration. The methodology of this study is guided by the framework of Denyer and Tranfield, which consists of four key stages: (1) defining the review question and locating relevant literature, (2) selecting studies based on predefined criteria, (3) data extraction and synthesis, and (4) reporting and interpreting the findings (Denyer et al., 2009). In addition to database searches, the method of snowballing was applied to enhance the comprehensiveness of the review (Wohlin, 2014). This involved examining the reference lists of selected articles (backward snowballing) and identifying newer publications that cited those articles (forward snowballing), thereby uncovering additional relevant studies that may not have appeared in the initial search results.

### 3.1 Search Phase

The first phase of the SLR involves the identification of relevant databases and keywords to gather suitable literature. In this research, Scopus<sup>1</sup> is selected due to its wide coverage of peer-reviewed literature and their advanced search functionalities.

The search strings formulated directly align with the research objectives, drawing from the key research questions and the core themes of the thesis. Key terms included:

- ("Circular Business Models" OR "CBMs" OR "Sustainable Business Models" OR "Closed-Loop Models") AND ("Sustainability Strategies" OR "Circular Economy" OR "Resource Efficiency" OR "Eco-Innovation")
- ("Financial Barriers" OR "Cost Constraints" OR "Capital Limitations" OR "Investment Barriers") AND ("Sustainability" OR "Green Transition" OR "Environmental Goals" OR "Sustainable Development")
- ("Profitability" OR "Economic Returns" OR "Financial Performance" OR "Business Viability") AND ("Circular Economy" OR "Circular Business Models" OR "Green Economy" OR "Sustainable Economy")
- ("Financial Risks" OR "Investment Risks" OR "Economic Uncertainty" OR "Capital Exposure") AND ("Circular Transition" OR "Green Transition" OR "Sustainability Shift" OR "Eco-Transformation")
- ("Economic Challenges" OR "Financial Barriers" OR "Cost Issues" OR "Investment Needs") AND ("Circular Business Models" OR "CBMs" OR "Closed-Loop Business Models" OR "Sustainable Models")
- ("Return on Investment" OR "ROI" OR "Investment Returns" OR "Capital Efficiency") AND ("Profitability" OR "Business Performance" OR "Revenue Generation" OR "Financial Success")

The search was limited to studies published between 2010 and 2025 to ensure the inclusion of both foundational theories and the most recent insights, given the fast-changing nature of sustainable business practices and financial models. However, exemptions are made for fundamental theories regarding the provided key terms.

### 3.2 Selection Phase

The article inclusion/exclusion criteria for this study are summarized in **Table 1**. To ensure the quality and reliability of the study, only articles published in peer-reviewed journals and conference proceedings were considered. Only publications between 2010 and 2025 were considered to ensure both foundational theories as well as most recent insights. Only articles published in English were included; those in other languages were excluded. Additionally, articles were excluded if they lacked a clear connection to the research questions,

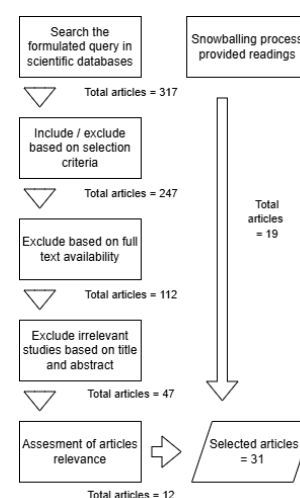
which was determined by evaluating their title, abstract, or full text. Papers that were incomplete, overly brief, or too general were also not considered.

**Table 1: SLR Inclusion and Exclusion Criteria**

Inclusion Criteria	Exclusion Criteria
Peer-reviewed journal articles or conference proceedings	Papers that are not complete
Written in English	Studies not related to the main research question based on title, abstract, or content
Published between 2010 and 2025	Duplicate articles by title or content
Full-text availability with abstract	Articles eliminated based on quality of content
Directly related to financial aspects of CBMs	

The article selection process followed a structured multi-stage approach. First, a formulated query was run across scientific databases, yielding 317 articles. Based on predefined selection criteria, 247 articles were retained. These were further filtered based on full-text availability, resulting in 112 articles. Subsequently, 65 studies were excluded based on irrelevance identified through title and abstract screening, leaving 47 articles. A detailed relevance assessment of the remaining articles narrowed the selection to 12 core studies. In this context, relevance refers to how well each article aligned with the research questions and focus areas of the thesis, particularly the financial trade-offs and strategic challenges of adopting CBMs. Only articles that provided direct insights into these topics or presented robust, applicable data were considered for inclusion. A detailed relevance assessment of the remaining articles narrowed the selection to 12 core studies. In addition to the database search, snowballing was used to identify further relevant literature, yielding 19 additional articles. After relevance checks, a total of **31 articles** were selected for inclusion. **Figure 2** depicts the entire selection process used in this study. It illustrates each step of the selection procedure, including how many articles were retained or excluded at each stage. This figure provides a clear and comprehensive overview of how the final set of core studies was determined.

**Figure 2: SLR- Selection flow chart**



<sup>1</sup> <https://www.scopus.com/pages/home#basic>

## 4. RESULTS AND DISCUSSION

This chapter provides an overview of the financial dynamics involved in transitioning to CBMs.

Financial considerations play a pivotal role in determining the viability, scalability, and long-term success of CBMs. For circular strategies to be adopted at scale, they must not only contribute to environmental objectives but also demonstrate financial viability and align with firms' available resources and investment capacities (Aranda-Uson et al., 2019). Therefore, this chapter systematically addresses the sub-questions of the study by examining two core aspects:

Firstly, Section 4.1 covers the financial barriers and drivers that influence the adoption of CBMs. Secondly, Section 4.2 covers the relationship between financial performance and circularity, exploring how and under what conditions circular strategies can contribute to improved economic outcomes.

### 4.1 Financial Drivers and Barriers in Adopting Circular Business Models

#### 4.1.1 Overview of Financial Barriers in CBM Adoption

The adoption of CBMs faces several significant financial barriers, this is summarized in Table 2. These barriers highlight the structural and economic challenges organizations must overcome to successfully transition toward more circular business practices.

One of the most frequently reported obstacles is the **high investment and implementation costs**, which include high upfront costs, switching costs, and recycling-related expenses. Such financial burdens often discourage firms, particularly small and medium-sized enterprises, from engaging in CBM adoption, as the initial expenditures are perceived as high-risk with uncertain short-term returns. (Aguilera-Caracuel et al., 2013; Aranda-Uson et al., 2019; Frishammar et al., 2025; Ghisellini et al., 2016).

Another critical barrier in adopting circular business models is the **limited access to funding, credit, and financial support**, as traditional financing mechanisms are still structured around linear models and often fail to accommodate the longer payback periods and different risk profiles of circular initiatives, discouraging investments even when companies have strategic interest (Kumar et al., 2024; Thorley et al., 2022). Additionally, the absence of supportive fiscal measures, such as tax benefits, subsidies, or grants that encourage circular practices, alongside the misalignment of existing financial structures, makes it financially safer for firms to continue operating within traditional linear systems, thus putting circular investments at a disadvantage (Baldassarre et al., 2023; Bjornbet et al., 2021).

**Uncertain financial returns and profitability risks** further compound these challenges. Companies are often reluctant to fully embrace CBMs due to the unpredictability of financial outcomes, which depend heavily on factors such as market acceptance, regulatory stability, and the ability to create new forms of customer value (Eisenreich et al., 2022; Hawkins, 2006; Jorgensen et al., 2018).

In some cases, **higher costs of recycled materials and the economic limitations of reuse** also act as deterrents. When recycled inputs remain more expensive than virgin alternatives, circular initiatives lose their financial attractiveness, particularly in highly price-sensitive markets (Ghisellini et al., 2020; Giorgi et al., 2022).

Finally, the **dominance of linear business logic and market resistance** presents a broader systemic financial barrier. In industries where established operational and financial models prioritize throughput and cost efficiency over longevity and reuse, the adoption of circular models becomes a more radical

and financially risky departure (Korhonen et al., 2018; Van Opstal et al., 2023).

While these barriers are widely recognized in the literature, it is notable that some expected challenges receive little attention. For instance, cultural and behavioural resistance among customers is rarely discussed, despite its direct financial consequences. Companies may struggle with customer reluctance to adopt unfamiliar service-based or refurbished offerings, which could reduce cash flows and impact the return on investment (Bocken et al., 2016). Moreover, the additional financial burden of marketing, communication, and rebranding required to build customer trust in circular products is often overlooked (Baldassarre et al., 2023). These hidden or underreported costs deserve greater recognition, as they can significantly influence the financial viability of CBM transitions, especially in competitive or conservative markets. This gap in the literature highlights an interesting opportunity for future research, particularly into the financial implications of consumer behaviour, branding strategies, and cultural acceptance in circular transitions.

Table 2 shows financial barriers that are consistently reported across a wide range of studies and sectors, indicating that overcoming them requires not only internal strategic shifts but also supportive external frameworks, including regulatory reforms and the evolution of financial markets.

#### 4.1.2 Overview on Non-Financial Barriers in CBM adaptation

Non-financial barriers, also significantly affect the adoption and success of CBMs. These barriers, summarized in Table 2, reflect broader structural, operational, and organizational challenges that companies may encounter when shifting from linear to circular practices. It is important to note that the significance of non-financial barriers can vary across different companies, sectors, and organizational contexts (Frishammar et al., 2025; Lewandowski, 2016).

One key non-financial barrier is **complex regulations and unclear policies**, which create uncertainty and hesitation among firms considering circular strategies. Without clear guidelines, companies face difficulties in designing and scaling CBMs and risk encountering legal and compliance challenges (Aguilera-Caracuel et al., 2013; Kumar et al., 2024; Rataj et al., 2024).

**Complex logistics and reverse supply chains** also present operational hurdles, as managing product returns, refurbishment, and recycling requires fundamentally different systems than traditional linear models. Uncertainties around return flows, quality control, and cost structures add further complexity (Amir et al., 2022; Giorgi et al., 2022).

The **adaptation of existing business models** is another critical challenge. Moving from product sales to service-based models demands internal reorganization and careful management of consumer behaviour, as customers may resist new ownership or usage models (Frishammar et al., 2025; Lewandowski, 2016; Jorgensen et al., 2018).

**Short-term pressures**, such as investor demands for immediate returns, often conflict with the longer investment horizons required for circular transitions (Hawkins, 2006; Rataj et al., 2024).

Finally, **technical and operational challenges**, including a lack of expertise and difficulties in structuring circular operations, can limit a company's ability to effectively redesign products and processes (Baldassarre et al., 2023; Rataj et al., 2024).

Table 2 shows non-financial barriers that highlight that successful CBM adoption requires not only financial solutions but also significant organizational, strategic, and infrastructural change.



Accounting for non-financial barriers is particularly difficult, as they are often context-specific, qualitative, and harder to quantify than financial factors. Nevertheless, their influence can be just as critical, shaping organizational readiness, stakeholder acceptance, and long-term viability of circular initiatives. Ignoring these non-financial dimensions can lead to underestimating the complexity of the transition and ultimately hinder successful implementation of CBMs.

### 4.1.3 Overview of Financial Drivers in CBM Adoption

The successful adoption of CBMs is not only challenged by financial barriers but is also propelled by several financial drivers. In Table 2 are drivers that demonstrate the potential for circular transitions to create economic opportunities, cost efficiencies, and improved financial resilience for companies willing to innovate.

One of the most frequently cited drivers is **cost savings and operational efficiency**. Numerous studies point out that circular strategies such as resource reuse, recycling, product longevity, and material efficiency can significantly lower operational costs over time. These savings can strengthen business cases for circular initiatives, especially when material input prices are volatile or environmental taxes increase (Aguilera-Caracuel et al., 2013; Bocken et al., 2016; Frishammar et al., 2025; Ghisellini et al., 2016).

**Access to funding and financial incentives** also emerges as a major enabler. Public subsidies, green bonds, tax incentives, and dedicated circular economy (CE) loans can lower the financial risks associated with adopting CBMs. Access to such supportive financial instruments can make circular investments more attractive, especially for smaller firms that may otherwise struggle with limited internal resources (Aranda-Uson et al., 2019; Kumar et al., 2024; Sarmiento et al., 2022).

Another important driver is **the pursuit of long-term profitability and value creation**. While circular strategies often require initial investments and longer return horizons, they can offer significant economic gains in the medium to long term. Business models designed around durability, service provision, or closed material loops can lead to recurring revenues, greater customer loyalty, and reduced dependence on finite resources (Bocken et al., 2016; Eisenreich et al., 2022; Kanzari, 2023).

**Opportunities through service-based models and digitalization** represent an additional financial incentive. Innovations such as Product-Service Systems (PSS), sharing platforms, and digital tracking technologies enable companies to generate new revenue streams and optimize asset utilization. Digital tools also help manage uncertainty in circular operations by improving data transparency and operational predictability (Bjornbet et al., 2021; Lewandowski, 2016).

In parallel, companies pursuing circular transitions can benefit from **strengthened customer relationships and premium pricing opportunities**. Circular offerings often align with growing consumer interest in sustainability, allowing businesses to differentiate themselves in the market. Premium pricing strategies or enhanced customer loyalty programs linked to circular products and services can further boost financial outcomes (Van Opstal et al., 2023; Kanzari, 2023).

Finally, **risk mitigation and reduced financial exposure** act as strategic financial drivers. Circular practices can make firms more resilient to regulatory changes, resource shortages, and price fluctuations. By decoupling growth from resource consumption, companies can hedge against long-term risks and ensure more stable financial performance (Hawkins, 2006; Rataj et al., 2024).

As shown in Table 2, these financial drivers illustrate that when

circular transitions are strategically designed and supported by appropriate financial mechanisms, they can offer not only environmental but also strong economic advantages. Understanding and leveraging these drivers is therefore essential for organizations aiming to scale CBM adoption successfully.

### 4.1.4 Overview of Non-Financial Drivers in CMB adoption

Beyond financial incentives, several non-financial drivers also play a crucial role in promoting the adoption of CBMs. These drivers, summarized in Table 2, highlight how reputational, regulatory, and strategic factors can support and accelerate circular transitions. It is important to note that the relevance and strength of non-financial drivers may vary across sectors and organizations.

One major non-financial driver is **improved brand reputation and competitive advantage**. Companies adopting circular strategies can strengthen their brand image, differentiate themselves in increasingly sustainability-focused markets, and enhance their appeal to environmentally conscious consumers and investors (Aguilera-Caracuel et al., 2013; Bocken et al., 2016; Rataj et al., 2024).

**Growing consumer demand for sustainable practices** further supports circular transitions. As awareness of environmental issues rises, customers increasingly expect businesses to offer sustainable products and services, encouraging firms to integrate circular principles to maintain or grow their market share (Aguilera-Caracuel et al., 2013; Amir et al., 2022).

**Supportive regulatory frameworks and public policies**, such as Environmental, Social and Governmental (ESG) reporting requirements and green public procurement initiatives, also drive CBM adoption. These policies create both incentives and pressures for businesses to align with circular economy principles and sustainable development goals (Kumar et al., 2024; Van Opstal et al., 2023).

The transition to circularity also opens **new business opportunities and supports employment creation**. Circular strategies can stimulate innovation, new service models, and localized value chains, offering growth pathways beyond traditional linear models (Korhonen et al., 2018).

**Value co-creation with partners and enhanced stakeholder collaboration** is another essential non-financial driver.

Engaging with suppliers, customers, and other partners enables companies to share risks, innovate collectively, and build ecosystems that support circular solutions (Eisenreich et al., 2022; Frishammar et al., 2025).

Finally, **strategic alignment with sustainability certifications and ESG branding** can reinforce circular initiatives. Achieving recognized sustainability certifications or strong ESG performance can not only strengthen market positioning but also open access to new investor groups and financial incentives (Ghisellini et al., 2016; Giorgi et al., 2022).

### 4.1.5 Summary of Financial Trade-offs

The findings presented in this chapter highlight the complex financial landscape surrounding the adoption of CBMs.

Companies face a range of financial and non-financial barriers (Table 2) that complicate the transition, including high upfront costs, regulatory uncertainty, and operational challenges. At the same time, there are several financial and non-financial drivers (**Fout! Verwijzingsbron niet gevonden.**) that encourage adoption, such as opportunities for cost savings, improved competitiveness, access to incentives, and growing consumer demand for sustainable practices.

The title of this section emphasizes “trade-offs,” and indeed, the analysis reveals several key tensions that firms must navigate. Most notably, there is a significant trade-off between short-term

financial strain and long-term strategic gain. Circular transitions often involve high initial investments (e.g., in redesign, infrastructure, or digital systems) without immediate returns, which contrasts with the expectations of rapid profitability under linear models. This can place pressure on managers, particularly in publicly traded companies or those backed by short-term-focused investors.

Another trade-off lies in operational flexibility versus structural transformation. Embracing CBMs often means reconfiguring supply chains, logistics, and customer interfaces, changes that may reduce flexibility or increase dependency on specific partners in the short term but offer long-term efficiency and resilience. Additionally, while circular initiatives may yield cost savings over time, such as reduced material costs or waste management fees, these benefits typically depend on achieving economies of scale and overcoming initial inefficiencies. The results also emphasize the importance of stakeholder collaboration and supportive policy frameworks. Engaging with partners across the value chain, and benefiting from regulatory incentives and public funding, can help mitigate the financial and operational risks that often hinder CBM implementation. Successful circular transitions depend not only on internal financial planning but also on navigating broader systemic conditions.

## 4.2 The Financial Performance Implications of Transitioning to Circular Business Models

The transition from linear to CBMs has the potential to fundamentally reshape firm-level financial performance. However, the relationship is not straightforward. As the literature reveals, circular strategies can both enhance and challenge financial outcomes (see Section 4.1.5), depending on how they are designed, implemented, and supported.

### 4.2.1 Impact of Circularity on Financial Performance

Overall, transitioning to CBMs offers firms a pathway to long-term financial benefits, though it often involves short-term financial trade-offs. Many studies highlight the potential for cost savings, resource efficiency, risk reduction, and new revenue generation through circular practices such as reuse, remanufacturing, leasing, and service-based models (Bocken et al., 2016; Eisenreich et al., 2022; Ghisellini et al., 2016). Circular initiatives can lead to reduced input costs, improved customer loyalty, and more resilient supply chains. However, financial benefits from circular strategies are not automatic. Several authors caution that CBM adoption frequently requires high upfront investments and entails longer payback periods compared to traditional linear models (Aguilera-Caracuel et al., 2013; Frishammar et al., 2025). In the short term, circular transitions may introduce financial risks due to operational complexity, uncertain market acceptance, and insufficient supportive infrastructure (Genovese et al., 2017; Giorgi et al., 2022). Additionally, some studies point to the limits and downsides of circular strategies if they are poorly designed. For example, recycling processes can be energy-intensive and costly, and customer reluctance to adopt refurbished goods can restrict market growth (Geissdoerfer et al., 2016; Geissdoerfer et al., 2018). Importantly, the financial performance implications of circularity are not uniform across all firms. Sectoral characteristics play a major role: for instance, manufacturing firms in resource-intensive industries (e.g., construction, automotive) often realize higher cost savings from circular strategies than firms in digital services (Ghisellini et al., 2016). Meanwhile, companies in fashion or electronics sectors may face stronger resistance to refurbished goods due to consumer perception issues (Geissdoerfer et al., 2016).

Company size also influences outcomes. Large corporations often have more resources to absorb initial investments and to experiment with circular initiatives at scale. In contrast, SMEs may struggle more with access to capital, internal expertise, or navigating regulatory complexity (Baldassarre et al., 2023). However, SMEs can be more agile and may benefit from local circular ecosystems or niche sustainability markets.

Geographical location adds further nuance. Firms operating in regions with strong policy support (e.g., Northern Europe) or consumer demand for sustainability tend to achieve better financial returns on circular investments (Kumar et al., 2024). In contrast, companies in less developed regulatory environments may face additional risks or lack access to green financing.

Thus, while circularity can strengthen financial performance over time, success depends heavily on critical internal and external factors. For instance, Philips' shift to a Product-as-a-Service model for lighting allowed it to retain ownership of materials and benefit from long-term service contracts, ultimately reducing material costs and boosting customer retention (Circular X, 2025). Similarly, Interface Inc., a modular carpet manufacturer, has achieved substantial savings through material reuse and closed-loop recycling, reporting millions in avoided raw material costs over two decades (Ellen MacArthur Foundation, n.d.). Conversely, companies like H&M have faced criticism and cost challenges when attempting large-scale clothing recycling, highlighting how technological and market readiness must align with strategic ambition for circular models to be financially viable (Cosh!, 2024).

### 4.2.2 Critical Success Factors for Financially Viable CBM Transitions

The literature identifies several factors that are **critical for achieving positive financial outcomes** when transitioning to CBMs:

**Strong Innovation and Strategic Alignment:** The effectiveness of green innovation is crucial. Literature shows that financial performance improves only when circular innovations are strong and not constrained by overly strict regulations (Aguilera-Caracuel et al. 2013). Aligning circular strategies with business goals, customer demands, and operational capabilities is vital (Bjornbet et al., 2021; Jorgensen et al., 2018).

**Intentional Design and System Integration:** A critical success factor is the intentional design of circular systems, including product design, reverse logistics, and value recovery processes. Successful CBMs align value propositions, supply chain structures, and ICT tools to reduce uncertainty and optimize costs (Amir et al., 2022; Baldassarre et al., 2023).

**Financial Tools and Measurement:** Using adapted financial metrics such as Material Flow Cost Accounting and Life Cycle Costing (LCC) helps firms properly assess the financial implications of circular strategies. Measuring performance across multiple life cycles ensures better decision-making (Eisenreich et al., 2022; Kanzari, 2023).

**Stakeholder Collaboration and Partnerships:** Strong partnerships across the supply chain, involving suppliers, customers, and financiers, are critical for reducing risks, sharing resources, and scaling circular practices (Esposito et al., 2024; Frishammar et al., 2025). Stakeholder collaboration improves coordination and can open up access to funding and new markets.

**Policy and Regulatory Support:** Public policy frameworks play a supportive role. Green finance initiatives, public procurement policies, and regulatory incentives can ease the financial burden of CBM adoption and reduce risk exposure (Kumar et al., 2024; Giorgi et al., 2022).



**Organizational Capabilities and Readiness:** Firms that cultivate internal learning, flexibility, and innovation capacity are better able to absorb the complexities of circular transitions. Readiness for change is directly linked to better financial outcomes over time (Thorley et al., 2022; Van Opstal et al., 2023).

While these factors are widely reported in the literature, they do not all carry the same weight across contexts. For example, for large corporations with extensive global supply chains, system integration and financial metrics may be more impactful. For SMEs, policy incentives and collaborative partnerships may be more decisive. Similarly, in developing countries, access to green finance and regulatory clarity may be the critical enablers, while in innovation-driven economies, technological capability and internal readiness could be more important. In addition, differences exist between established companies transitioning from linear models and startups that build circularity into their operations from the outset. Transitioning firms often face legacy system challenges and sunk cost considerations, making integration of circular practices more complex and financially riskier. Startups, on the other hand, can more easily design their business models around circularity from the ground up, potentially reducing transition costs and aligning organizational culture from the start. Therefore, the relative importance of these success factors is context-dependent, and managers must prioritize based on their firm's size, sector, development stage, and regional conditions. Future research could further quantify the weighting of these success factors across industries.

### 4.3 Synthesis: From Financial Barriers to Strategic Enablers

This section synthesizes key findings to illustrate how financial barriers can evolve into strategic enablers of circular transitions

#### 4.3.1 *Turning Financial Challenges into Opportunities*

A major insight emerging from the analysis is that financial barriers and risks associated with CBMs are not static obstacles, but dynamic challenges that can be mitigated or even leveraged. High upfront investment costs, for instance, often discourage initial CBM adoption (Aguilera-Caracuel et al., 2013; Frishammar et al., 2025). However, these investments can be viewed strategically as an entry point into more resilient and cost-efficient systems over time, particularly as resource prices rise and regulatory pressures tighten (Bocken et al., 2016; Genovese et al., 2017).

Similarly, uncertainty around financial returns, frequently cited as a barrier, can be reduced through better financial measurement and performance tools such as LCC and Material Flow Cost Accounting (Eisenreich et al., 2022; Kanzari, 2023). Firms that adapt their evaluation metrics to reflect the full life cycle value of circular strategies are better positioned to justify and secure investments in CBMs.

Moreover, limited access to funding, another critical barrier, can be offset by tapping into emerging green finance instruments, public subsidies, and innovative investment mechanisms (Kumar et al., 2024; Sarmiento et al., 2022). Policy frameworks increasingly prioritize circularity, offering firms new pathways to external support.

Thus, barriers traditionally framed as financial risks can, with strategic adaptation, become sources of competitive advantage and differentiation.

#### 4.3.2 *Circular Transition as a Long-Term Strategic Investment*

The evidence indicates that transitioning from linear to CBMs should be understood as a long-term strategic investment rather

than a short-term profit-driven shift. Short-term financial trade-offs, such as higher capital expenditures and longer payback periods, are counterbalanced by long-term benefits like cost savings, risk reduction, access to new markets, and improved brand reputation (Ghisellini et al., 2016; Giorgi et al., 2022; Rovanto et al., 2020).

CBMs allow firms to decouple growth from resource consumption, making them less vulnerable to raw material price volatility and regulatory tightening (Genovese et al., 2017; Hawkins, 2006). They also enable firms to extend product lifecycles and generate recurring revenue streams through service-based offerings (Bjornbet et al., 2021; Lewandowski, 2016).

Critically, firms that adopt CBMs strategically are better positioned to achieve resilience in the face of environmental, social, and economic uncertainties. CBMs are not simply an operational adjustment but a structural shift toward business models that align profitability with sustainability.

#### 4.3.3 *The Role of Innovation, Policy, and Collaboration*

Achieving financially sustainable CBMs requires more than individual firm effort. Three factors are consistently identified as essential across the literature: innovation, policy support, and collaboration.

First, innovation in product design, business models, and supply chains is central to making circular strategies economically viable (Bocken et al., 2016; Amir et al., 2022). Innovations such as PSS, smart reverse logistics, and Industry 4.0 technologies help optimize resource flows and reduce operational uncertainties (Eisenreich et al., 2022; Khan et al., 2021).

Second, supportive policy frameworks play a critical role in reducing financial risks and incentivizing circular investments. Regulatory measures like extended producer responsibility, green public procurement, and access to green finance mechanisms lower the barriers to CBM adoption and encourage firms to engage in long-term planning (Giorgi et al., 2022; Kumar et al., 2024; Van Opstal et al., 2023).

Finally, collaboration among stakeholders including customers, suppliers, investors, and public authorities, is key to unlocking the full financial potential of CBMs. Strong stakeholder partnerships enable cost-sharing, risk reduction, knowledge exchange, and co-innovation (Esposito et al., 2024; Frishammar et al., 2025; Baldassarre et al., 2023). Companies that proactively engage their ecosystem are better able to create integrated, scalable, and financially sound circular solutions.

#### 4.3.4 *Mitigating Short-Term Financial Losses in Circular Investments*

While short-term financial pressures are a well-documented barrier to circular transition (Aguilera-Caracuel et al., 2013; Frishammar et al., 2025), firms can adopt targeted strategies to mitigate early financial losses associated with circular investments. These strategies include phased implementation, starting with pilot projects or limited product lines to spread risk, and hybrid business models that combine linear and circular offerings during the transition period (Bjornbet et al., 2021).

Additionally, leveraging public funding opportunities, such as subsidies or green innovation grants (Kumar et al., 2024), can offset initial capital expenditures. Strengthening financial planning tools, including LCC and scenario analysis, allows firms to better forecast the long-term financial benefits of circular initiatives, helping to justify early investments internally (Eisenreich et al., 2022; Kanzari, 2023).

Involving external partners and investors early in the process through co-financing models can further distribute financial risk across the value chain (Esposito et al., 2024).

By strategically managing investment horizons and financing models, companies can minimize short-term financial disruption while positioning themselves for the long-term value creation that circularity promises.

#### 4.3.5 Summary

This chapter has offered a comprehensive examination of the financial landscape surrounding CBMs. The analysis began by identifying a range of financial and non-financial barriers, from high upfront costs and uncertain profitability to complex regulations and consumer resistance, that hinder the adoption of circular strategies. In parallel, it explored a series of financial and non-financial drivers, such as operational cost savings, green financing, reputational gains, and supportive regulatory frameworks, which can motivate and enable firms to pursue circularity.

A central theme that emerged is the presence of strategic trade-offs. Firms must navigate the tension between short-term financial pressures and long-term strategic benefits, often making initial investments without immediate returns. Yet, these costs can lead to long-term advantages such as improved risk resilience, access to new markets, and stronger brand positioning. As such, circularity should be framed not as a cost, but as a long-term strategic investment.

Importantly, the chapter demonstrated that these trade-offs are not fixed; they can be mitigated through innovation, policy alignment, and stakeholder collaboration. Tools like Life Cycle Costing, blended finance models, and collaborative partnerships help reframe financial risks as manageable, and even strategic, opportunities.

This synthesis sets the stage for the next chapter. While Chapter 4 has focused on describing and interpreting the empirical findings, Chapter 5 will shift toward a conceptual and applied lens. It will explore how these results refine existing theoretical frameworks, such as the Triple Bottom Line, Resource-Based View, and Institutional Theory, and translate them into actionable guidance for managers, investors, and policymakers. This progression will ultimately support the design of financially viable circular transitions and highlight how firms can move beyond short-term barriers to long-term sustainability and profitability.

## 5. RESULTS - FRAMEWORK

Chapter 5 translates the insights from chapter 4 into strategic guidance and academic contributions, anchoring the discussion in both theory and practice.

### 5.1 The Need for a Contextual Financial Framework

This chapter revisits key sustainability and strategic management theories to examine how they address the financial aspects of transitioning to CBMs. While these frameworks offer valuable insights, they often do not place sufficient emphasis on the influence of firm size, legacy systems, and regional disparities in shaping financial outcomes. To address these considerations, this chapter proposes a refined framework that incorporates these contextual factors and guides financially viable transitions to circular business models.

**Triple Bottom Line (TBL):** The TBL framework (Elkington, 1994) argues for simultaneous value creation along environmental, social, and economic lines. In principle, circular strategies can align well with this ideal. Prior research identifies cost savings (Bocken et al., 2016; Sarmiento et al., 2022), risk reduction (Hawkins, 2006), and brand enhancement (Aguilera-Caracuel et al., 2013) as major outcomes of CBM implementation. However, often achieving all three “bottom lines” simultaneously is more aspirational than attainable, especially in financially constrained or structurally immature

contexts (Norman et al., 2004).

SMEs, in particular, struggle to access the capital and financing tools needed to realize these benefits, facing disproportionate risks from high upfront investments and delayed returns (Aranda-Uson et al., 2019; Frishammar et al., 2025). Larger corporations, by contrast, are better positioned to absorb initial costs and make strategic, long-term sustainability investments. Geography further complicates the picture. Firms in Northern and Western Europe enjoy clearer regulatory guidance and stronger institutional support (Van Opstal et al., 2023), making it more feasible to align environmental, social, and financial goals. Companies in emerging markets, however, must often contend with financial fragility and underdeveloped circular ecosystems (Kumar et al., 2024).

In short, TBL needs contextual calibration, recognizing that financial and structural realities shape which dimensions of sustainability are prioritized and when. This insight forms the first building block of the proposed framework: grounding triple value creation in financial feasibility.

**Resource-Based View (RBV):** RBV entails that sustainable competitive advantage stems from unique firm resources and capabilities. The findings affirm that managerial skill, financial slack, and digital infrastructure are essential enablers of circular innovation (Bjornbet et al., 2021; Geissdoerfer et al., 2020). However, what RBV underestimates is the unequal distribution of these resources, especially among firms of different sizes and in different regions. Large firms benefit from economies of scale, innovation partnerships, and internal R&D units that accelerate CBM development. SMEs, meanwhile, often remain locked in legacy systems and struggle to access finance or attract strategic talent (Ghisellini et al., 2016).

Regional embeddedness also plays a crucial role. Companies situated in policy-driven or innovation-intensive regions (e.g., the Netherlands or Sweden) are more likely to access green subsidies, ESG funding, and circular networks (Kumar et al., 2024; Van Opstal et al., 2023).

These findings suggest that RBV should evolve toward a context-aware capability model, where external conditions, such as geographic location, policy maturity, and market readiness, are seen as co-determinants of firm capability. This idea informs the second core of the new framework: blending internal capabilities with external enablers.

**Institutional Theory:** Institutional theory explains how firms conform to social norms, regulations, and cultural expectations. CBM adoption is often viewed as a response to increasing institutional pressure from ESG frameworks, consumer preferences, and policy instruments (Amir et al., 2022; Kumar et al., 2024). However, institutional alignment alone is insufficient to drive adoption.

Misaligned financial systems (Thorley et al., 2022), investor short-termism (Hawkins, 2006), and the dominance of linear economic logic (Korhonen et al., 2018) continue to de-incentivize circular transitions, even where societal norms or regulation favour them.

Furthermore, size and geography again moderate institutional responsiveness. Larger firms typically have legal and sustainability teams to interpret and implement circular policies, while SMEs often lack such capacity and face additional compliance burdens (Giorgi et al., 2022).

Thus, a refined institutional perspective is needed, one that integrates financial structures and absorptive capacity into its analysis of institutional conformity. This shapes the third foundation of the proposed framework: understanding institutional pressures through a financial lens.

**The Rationale for a New Framework:** Taken together, the limitations identified in these three theoretical pillars highlight a significant blind spot in the current sustainability discourse: the

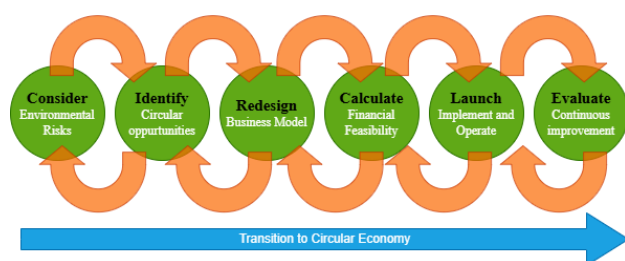
underrepresentation of financial feasibility, firm size, and geographic variability in determining CBM success. This chapter therefore lays the conceptual foundation for the framework developed in the following section. The goal is not to discard existing theories but to build on their strengths while addressing their practical limitations, creating a more grounded, actionable roadmap for firms navigating the circular transition.

## 5.2 Resulting framework

As outlined in the preceding section, dominant theories such as the TBL, RBV, and Institutional Theory provide valuable conceptual foundations for sustainability strategy. However, the limitations identified highlight a significant blind spot in the current sustainability frameworks.

A response to these theoretical limitations and real-world challenges is the CIRCLE Framework (Figure 3), a structured, action-oriented model designed to guide organizations through the financial and strategic complexities of moving from linear to CBMs. CIRCLE translates abstract theoretical principles into a phased, iterative process that allows for adaptation based on context, maturity, and firm-specific needs.

**Figure 3: CIRCLE Framework**



CIRCLE is an acronym for Consider – Identify – Redesign – Calculate – Launch – Evaluate. These six interconnected phases provide a flexible and practical roadmap for organizations across industries and sizes. Unlike rigid, one-size-fits-all models, CIRCLE explicitly embraces feedback loops, encouraging companies to revisit previous steps as new information, constraints, or opportunities emerge. This reflects a core insight of the framework: circular transformation is not a one-directional process. Rather, it involves continuous improvement, learning from implementation, and adapting strategies as firms gain experience, encounter new challenges, or as market and policy conditions evolve. Each stage of the CIRCLE framework will be further elaborated in the following sections. CIRCLE is a broad guiding framework, not a prescriptive checklist. It must be tailored to each company's specific financial, operational, and institutional context.

### 1. Consider

**Objective:** Establish the strategic case for circular transformation.

In this phase, firms critically assess why transitioning to a circular model is relevant to their specific business environment. This goes beyond general sustainability rhetoric and involves a grounded understanding of sector-specific drivers, regulatory exposure, and stakeholder expectations.

**Key Activities:** Conduct a PESTLE analysis, assess environmental risks and regulatory alignment, and map stakeholder expectations and reputational vulnerabilities.

**Key Drivers:** Growing consumer demand for sustainable practices, access to green financing and supportive policies (e.g., tax incentives, grants) & long-term profitability and risk reduction (reputation, regulatory compliance).

**Key Barriers:** Uncertainty about market acceptance & complexity in forecasting financial returns on circular investments.

This phase ensures that circular ambitions are anchored in reality and aligned with strategic priorities, creating a shared understanding among decision-makers and reducing the risk of misalignment later in the process.

### 2. Identify

**Objective:** Discover viable circular economy opportunities.

Once the business case is established, the next step is to identify specific circular opportunities suited to the firm's operations and sector. This goes beyond generic sustainability actions to pinpoint interventions that both reduce waste and align with the firm's value proposition and capabilities.

**Key Activities:** Map material and energy flows, explore relevant circular strategies, benchmark best practices, engage employees in idea generation, and validate demand.

**Key Drivers:** Potential for cost savings through resource efficiency & new revenue streams from remanufacturing, sharing, or PSS models.

**Key Barriers:** Limited internal resources and expertise in circular strategies & high initial investment needed to explore and develop circular initiatives.

By grounding opportunity identification in both operational data and stakeholder input, this phase ensures the firm focuses its efforts where they are technically feasible, economically attractive, and socially supported.

### 3. Redesign

**Objective:** Adapt or innovate the business model for circularity.

In this pivotal phase, the company rethinks how it creates, delivers, and captures value in a circular system. This often involves shifts in revenue models, supply chain configurations, customer relationships, and performance metrics. Unlike superficial sustainability add-ons, this phase emphasizes deep integration into the firm's strategic architecture.

**Key Activities:** Apply the Business Model Canvas, reframe the customer value proposition, explore new revenue models (e.g., leasing, subscriptions), redefine partnerships, and consider logistical and IT changes.

**Key Drivers:** Enhanced customer loyalty and brand differentiation through circular offerings & opportunities for premium pricing or new market segments.

**Key Barriers:** Need for capital expenditures in redesigning processes, logistics, and IT systems & potential resistance to shifting to service-based models (e.g., leasing, sharing).

Redesign is not a one-size-fits-all task. Firms must adapt strategies to match their capabilities, customer preferences, and regulatory environment. For example, a textile SME might focus on repair and resale, while an electronics firm might transition to modular leasing solutions.

### 4. Calculate

**Objective:** Assess the financial viability of the circular model.

This phase addresses one of the most critical dimensions of circular transformation: financial feasibility. Many circular initiatives fail because firms underestimate costs or overestimate payback speed. CIRCLE embeds financial modelling into the core of strategic planning.

**Key Activities:** Quantify costs, conduct scenario planning, identify financing options, monetize indirect benefits (e.g., brand value), and explore lifecycle costing.

**Key Drivers:** Availability of green loans, subsidies, and impact investing tools & cost savings from lifecycle management and improved risk resilience.

**Key Barriers:** High upfront costs and long payback periods & challenges in measuring ROI and accounting for indirect benefits (e.g., brand value).

By integrating financial logic into circular planning, this phase helps firms build internal alignment and investor confidence, especially when short-term returns are uncertain.

## 5. Launch

Objective: Implement and operate the circular model.

With the financial foundation in place, the redesigned model is implemented through pilots or full-scale rollouts. CIRCLE emphasizes a phased launch approach to manage risks and gather evidence before large-scale changes.

**Key Activities:** Test pilot projects, train employees, adapt logistics and IT, and monitor circular KPIs.

**Key Drivers:** Financial benefits from operational efficiencies and waste reduction & learning opportunities through pilots and scaling successful circular initiatives.

**Key Barriers:** Financial risks if pilots fail or market conditions shift unexpectedly & Short-term cash flow pressures during rollout.

Feedback mechanisms are crucial here: pilot results feed back into earlier phases, enabling real-time iteration and increasing the odds of scalable success.

## 6. Evaluate

Objective: Monitor, learn, and improve.

Circularity is not a static destination, it's a continuous process of innovation and adaptation. This final phase institutionalizes learning loops, using data and stakeholder feedback to refine the model over time.

**Key Activities:** Track performance data, conduct reviews, revisit earlier phases, scale successful pilots, and explore regenerative or cross-sector collaborations.

**Key Drivers:** Continual cost optimization and performance gains from iterative improvements & opportunities for funding linked to proven circular performance (e.g., ESG metrics).

**Key Barriers:** Ongoing need for financial resources to refine and expand circular practices & market or regulatory changes creating new financial uncertainties.

The looping arrows in the CIRCLE visual represent this dynamic capability: firms should expect to cycle back and refine, not march through the framework once and stop. The CIRCLE Framework offers a pragmatic yet flexible roadmap for firms navigating the complex intersection of sustainability, financial performance, and operational change. By embedding financial analysis, sectoral realism, and contextual sensitivity into every phase, CIRCLE builds on, but also corrects, the blind spots of traditional frameworks like TBL, RBV, and Institutional Theory. Most importantly, CIRCLE recognizes that the transition to circularity is ongoing. Firms will need to move back and forth between phases, responding to pilot results, market reactions, or regulatory shifts. This repetitive design reflects how successful circular models emerge not from static planning, but from adaptive experimentation and learning.

## 5.3 CIRCLE framework for startups

While the CIRCLE Framework was developed primarily with established firms in mind, its flexible and iterative structure also offers a valuable pathway for startups aiming to build circularity into their core business design from the outset. In the case of startups, the first three phases, Consider, Identify, and Redesign, can be blended together into a unified Design step, forming the strategic foundation of a circular business model. This Design step allows startups to integrate circular thinking directly into their value proposition and operational approach. Unlike established firms needing to adapt existing systems, startups have the unique opportunity to CBMs from scratch, aligning financial feasibility with sustainability goals right from the beginning. The remaining phases, Calculate, Launch, and Evaluate, can then be followed as outlined in the framework, ensuring that new circular startups are financially viable, strategically robust, and capable of evolving as market and policy conditions shift.

## 5.4 Interview Findings & Assessment

To validate the financial insights and framework developed in this thesis, an expert interview was conducted with a professional experienced in the real-world application of circular business models. The primary goal was to assess whether the financial drivers, barriers, and the CIRCLE framework identified in the research accurately reflect real-world dynamics, the questions can be found in Figure 4: Interview questions. The interviewee consented to the anonymous use of their insights.

When asked about the key financial barriers companies face during their transition to CBMs, the respondent highlighted the complexity of the process and the limited ability of companies to clearly perceive the opportunities and improvements that circularity can offer. A lack of clear vision and motivation to embrace sustainability as a strategic advantage, rather than merely a regulatory necessity, emerged as a central obstacle. Many businesses struggle to see how circular practices contribute to financial performance, which often results in minimal engagement or merely superficial compliance. Conversely, the interview confirmed that regulatory pressure, especially in the form of mandatory reporting requirements and the threat of penalties, acts as a significant driver for the transition to circular business models. Companies feel compelled to act to avoid legal or reputational consequences. The interviewee also gave a notable example of the opportunity of exploring new markets; the company Matco, which, through the development of a new sustainable product (a paper-based pallet wrap), was able to attract a large new client. This underlines how circular innovation can open up new market opportunities and lead to tangible financial benefits.

The CIRCLE framework, introduced in this thesis to guide companies through the transition process, was largely validated by the interviewee. The six phases, Consider, Identify, Redesign, Calculate, Launch, and Evaluate, were seen as generally reflective of how circular transitions unfold in practice. The starting point is often regulatory compliance rather than voluntary innovation. Companies begin by assessing what is legally required, then gradually explore feasible solutions and adopt circular strategies accordingly. However, a key limitation noted was the insufficient internal motivation in many organizations. **Sustainability is still rarely seen as an opportunity to create value but more as a duty to comply.** This limited vision restricts deeper engagement with circularity and hampers long-term transformation.

The iterative nature of the CIRCLE framework was confirmed as an important strength. The interviewee emphasized the need for companies to continuously evaluate their progress, question what can be improved, and reframe sustainability in terms of added business value. By demonstrating concrete returns, companies are more likely to integrate circularity into their core strategy. This reflection process, described by the respondent as "holding up a mirror," is essential to keep circularity from becoming a one-off compliance measure.

Finally, the interviewee offered several recommendations for improving both the academic treatment of CBM financial dynamics and the CIRCLE framework itself. Academically, there is a need for clearer communication about existing subsidies and financial incentives that could support circular initiatives. Practically, the framework should place more emphasis on the motivational drivers behind circularity, not just what companies must do, but why they might want to. For example, some firms pursue circularity to strengthen brand image or meet customer demand for sustainable products. Businesses often see sustainability as a necessity rather than a value-creating opportunity, and **the framework should account for this mindset shift.** Additional points raised

included the importance of access to EU funding and the often-overlooked influence that Western companies could have over the sustainability of their imports.

## 5.5 Managerial Implications

This section translates the CIRCLE Framework into actionable guidance for managers, financial planners, and policymakers navigating the circular transition.

**For Managers:** Treat circularity as a long-term strategic investment despite upfront costs (Aguilera-Caracuel et al., 2013; Bocken et al., 2016). Tailor strategies to firm size, large firms can use internal resources for innovation, while SMEs benefit from agility and collaborative models (Eisenreich et al., 2022; Frishammar et al., 2025). Build internal alignment through employee engagement and continuous learning loops.

**For Financial Planners and Investors:** Move beyond short-term ROI by integrating environmental performance and long-term value creation (Frishammar et al., 2025; Rataj et al., 2024). Offer tailored financing tools, green micro-loans, circular leasing, or impact investing, and allocate capital strategically based on regional circular readiness. (Sarmiento et al., 2022)

**For Policymakers:** Support SMEs with grants, tax incentives, and accessible green funding (Thorley et al., 2022). Simplify regulations and invest in circular infrastructure (Kumar et al., 2024). Strengthening local ecosystems and offering technical guidance can help firms navigate early circular transitions. The CIRCLE Framework offers a comprehensive roadmap for circular transition, but its success depends on coordinated action across the business, financial, and policy spheres. Managers must lead with vision and adaptability, financial stakeholders must rethink risk and value, and policymakers must craft enabling environments. If each actor plays their part, CBMs can become not only sustainable, but also financially robust and resilient to future shocks.

## 6. CONCLUSION

This thesis set out to investigate a central challenge in sustainable business transformation: **How do companies navigate the trade-off between sustainability and financial profitability when transitioning to circular business model?** Through a systematic literature review of 31 academic sources and the development of the CIRCLE framework, this study has provided a structured understanding of how companies manage the financial dynamics of CBM adoption.

The analysis revealed that while CBMs offer clear long-term opportunities, such as cost savings, new revenue streams, and reduced financial exposure, firms face considerable short-term financial barriers. These include high upfront investment costs, limited access to tailored financing, and uncertain returns. For many firms, especially SMEs, these risks are further exacerbated by operational and institutional challenges like supply chain complexity, unclear regulation, and limited internal expertise.

However, the findings also highlight that financial challenges can be strategically reframed. Tools like life cycle costing and scenario analysis enable firms to assess the long-term value of circular investments. Access to green finance, public subsidies, and investor interest in ESG performance can help mitigate financial risk. Moreover, companies that align circular strategies with their capabilities, market context, and stakeholder expectations are more likely to achieve both environmental and economic value.

Crucially, this study shows that financial outcomes from CBM transitions are highly context-dependent. Factors such as firm size, sector, regulatory environment, and innovation capacity strongly shape the balance between sustainability and profitability. While large firms benefit from scale, SMEs can leverage agility and niche positioning. Regions with strong

policy support offer more favourable conditions for CBM adoption.

The resulting **CIRCLE framework** operationalizes these findings into a six-phase, iterative model (Consider – Identify – Redesign – Calculate – Launch – Evaluate) that helps companies plan, implement, and refine financially viable circular transitions. It explicitly accounts for firm-specific constraints, enabling both SMEs and large firms to tailor strategies based on their financial and institutional realities.

## 7. LIMITATIONS & FUTURE RESEARCH

### 7.1 Limitations

While this study provides valuable insights into the financial dynamics of transitioning to CBMs, several limitations must be acknowledged:

**1. Methodological bias:** The SLR relied on published academic literature, which may favour success stories over failures. Grey literature and real-time data weren't included, limiting practical depth.

**2. Temporal and regional skew:** Most studies are European and may not apply globally. Fast-changing sustainability policies mean some findings could already be outdated.

**3. No real-world testing:** The CIRCLE Framework is conceptual only. It hasn't been tested in practice, so its actual impact remains unknown.

**4. Generalization across sectors:** The analysis covers many industries but doesn't fully capture sector-specific financial realities.

### 7.2 Directions for Future Research

Building on these limitations and insights from the thesis, several promising avenues for future research are proposed:

**1. Empirical validation of the CIRCLE framework:** Future research should test the CIRCLE framework in practice through case studies and pilot projects, especially for SMEs in different financial and regulatory environments. This will help confirm its real-world relevance and highlight context-specific factors.

**2. Quantitative studies on success factor weighting:** As noted in Section 4.3.2, success factors like innovation, collaboration, and policy support vary by sector and geography. Future studies should develop models to quantitatively assess their relative weight, providing managers clearer guidance on investment priorities.

**3. Consumer behaviour and financial impact of circular offerings:** Section 4.2.1 highlighted that customer reluctance toward refurbished or service-based models is a financial barrier. Further research could explore how consumer acceptance influences CBM profitability and how trust in circular offerings can be fostered.

**4. The role of blended finance models and green investment instruments:** While this thesis discussed green finance and ESG-focused investments as enablers (Sections 4.4.1 and 4.4.4), more work is needed to evaluate how tools like green loans and impact investing affect CBM outcomes in practice. Comparative studies across financial mechanisms would be valuable.

**5. Regional disparities and policy implementation:** The thesis found that policy support is essential, but unevenly distributed. Comparative studies could examine how different regulatory environments enable or limit circular transitions, particularly in low- and middle-income countries where financial barriers remain high.

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## 9. APPENDICES

**Table 2: Barriers and Drivers in CBM Adoption**

Barrier or Driver	Type	Authors
<i>High investment and implementation costs</i>	Financial Barrier	Aguilera-Caracuel et al., 2013; Amir et al., 2022; Aranda-Uson et al., 2019; Bjornbet et al., 2021; Frishammar et al., 2025; Geissdoerfer et al., 2020; Ghisellini et al., 2020; Ghisellini et al., 2016; Giorgi et al., 2022; Jorgensen et al., 2018; Kanzari, 2023; Sarmento et al., 2022; Van Opstal et al., 2023; Wong et al., 2017
<i>Limited access to funding, credit, and financial support</i>	Financial Barrier	Aranda-Uson et al., 2019; Ghisellini et al., 2016; Kumar et al., 2024; Rataj et al., 2024; Thorley et al., 2022
<i>Uncertain financial returns and profitability risks</i>	Financial Barrier	Aranda-Uson et al., 2019; Eisenreich et al., 2022; Frishammar et al., 2025; Ghisellini et al., 2016; Hawkins, 2006; Jorgensen et al., 2018; Kanzari, 2023
<i>Lack of financial incentives and misaligned financial structures</i>	Financial Barrier	Baldassarre et al., 2023; Bjornbet et al., 2021; Kumar et al., 2024; Thorley et al., 2022; Van Opstal et al., 2023
<i>Higher costs of recycled materials and economic limitations of reuse</i>	Financial Barrier	Ghisellini et al., 2016; Ghisellini et al., 2020; Giorgi et al., 2022
<i>Dominance of linear business logic and market resistance</i>	Financial Barrier	Rovanto et al., 2020; Korhonen et al., 2018; Van Opstal et al., 2023
<i>Cost savings and operational efficiency</i>	Financial Driver	Aguilera-Caracuel et al., 2013; Baldassarre et al., 2023; Bjornbet et al., 2021; Bocken et al., 2016; Eisenreich et al., 2022; Frishammar et al., 2025; Geissdoerfer et al., 2020; Ghisellini et al., 2020; Ghisellini et al., 2016; Hawkins, 2006; Jorgensen et al., 2018; Lewandowski, 2016; Rovanto et al., 2020; Sarmento et al., 2022; Wong et al., 2017
<i>Access to funding and financial incentives</i>	Financial Driver	Aranda-Uson et al., 2019; Baldassarre et al., 2023; Kumar et al., 2024; Sarmento et al., 2022; Rataj et al., 2024
<i>Long-term profitability and value creation</i>	Financial Driver	Bocken et al., 2016; Eisenreich et al., 2022; Frishammar et al., 2025; Kanzari, 2023; Rataj et al., 2024
<i>Opportunities through service-based models and digitalization</i>	Financial Driver	Bjornbet et al., 2021; Eisenreich et al., 2022; Geissdoerfer et al., 2020; Lewandowski et al., 2016
<i>Strengthened customer relationships and premium pricing opportunities</i>	Financial Driver	Bocken et al., 2016; Kanzari, 2023; Van Opstal et al., 2023
<i>Risk mitigation and reduced financial exposure</i>	Financial Driver	Hawkins, 2006; Rataj et al., 2024
<i>Complex regulations and unclear policies</i>	Non-Financial Barrier	Aguilera-Caracuel et al., 2013; Hawkins, 2006; Kumar et al., 2024; Rataj et al., 2024
<i>Complex logistics and reverse supply chains</i>	Non-Financial Barrier	Amir et al., 2022; Giorgi et al., 2022
<i>Challenges in adapting business models</i>	Non-Financial Barrier	Frishammar et al., 2025; Lewandowski, 2016; Jorgensen et al., 2018
<i>Short-term pressures (investor expectations, pressure for fast profit)</i>	Non-Financial Barrier	Hawkins, 2006; Rataj et al., 2024
<i>Technical and operational challenges</i>	Non-Financial Barrier	Rataj et al., 2024; Baldassarre et al., 2023
<i>Improved brand reputation and competitive advantage</i>	Non-Financial Driver	Aguilera-Caracuel et al., 2013; Bocken et al., 2016; Hawkins, 2006; Rovanto et al., 2020; Rataj et al., 2024
<i>Growing consumer demand for sustainable practices</i>	Non-Financial Driver	Aguilera-Caracuel et al., 2013; Amir et al., 2022
<i>Supportive regulatory frameworks and policies</i>	Non-Financial Driver	Amir et al., 2022; Giorgi et al., 2022; Kumar et al., 2024; Van Opstal et al., 2023

<i>New business opportunities and employment creation</i> <i>Value co-creation with partners and stakeholder collaboration</i> <i>Strategic alignment with sustainability certifications and ESG branding</i>	Non-Financial Driver	Korhonen et al., 2018
	Non-Financial Driver	Eisenreich et al., 2022; Frishammar et al., 2025
	Non-Financial Driver	Ghisellini et al., 2016; Giorgi et al., 2022

**Figure 4: Interview questions**

**Purpose:**

The goal is to verify whether the financial drivers, barriers, and the CIRCLE framework identified in the thesis reflect the real-world experiences of companies transitioning to Circular Business Models.

**Introduction**

- Explain the study's aim (validating key financial findings and the CIRCLE framework).
- Confirm consent form to use insights anonymously in the thesis.

**Financial Barriers & Drivers**

- From your experience, what are the main financial challenges your company (or companies you know) faced when moving to circular practices?
- How do these challenges compare with the barriers identified in my thesis?
- What financial drivers do you see as most important for successfully adopting CBMs? Do they align with those in the thesis?

**CIRCLE Framework Validity**

- Looking at the six phases of the CIRCLE framework (Consider, Identify, Redesign, Calculate, Launch, Evaluate), do they reflect how your company approached circular transitions?
- Which phases resonate most with your experience (most important/seen most)? Are there any phases that seem missing or less important?
- Does the iterative/looping nature of the framework fit with how circular transitions actually happen in your context?

**Context-Specific Validation**

- The thesis suggests that sector, company size, and policy environment heavily influence financial performance in circular transitions. Can you share how these contextual factors play out in your case?
- How have government policies or financial support measures affected your decisions (guidance)?

**Recommendations and Improvements**

- In your view, what is missing in the current academic understanding of the financial dynamics of CBMs?
- If you could adjust or expand the CIRCLE framework, what changes would you make?
- Any final thoughts or real-world lessons that could help refine the thesis's conclusions?