Transforming Business Sustainability: Spherical Model Innovation for Client Engagement and Growth

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Abstract

The shift towards a more sustainable economy has led consumer-facing companies to set ambitious Spherical economy objectives. However, there is a lack of understanding of the innovation activities taking place within these organizations to achieve these goals, specifically in the context of waste management strategies. This study aims to fill this gap by investigating the crucial tasks performed by Spherical Business Model Innovation (SBMI) innovators in companies with a consumer focus. Using a dynamic capabilities perspective, we examine the innovative actions in line with the SBMI phases of visioning, perception, seizing, and transforming. The research inquiry is focused on identifying the procedures and resources that aid businesses in developing flexible skills throughout the SBMI process. We conduct in-depth interviews with target respondents in three businesses and use thematic analysis to map the data to the four SBMI phases. Our findings supplement the existing literature on SBMI innovation efforts and provide additional guidance for corporate operators seeking to transform their businesses sustainably through the adoption of SBMI practices.

Keywords: Business investigation; Sustainable Business; business model innovation; Dynamic abilities; Spherical business model

1. Introduction

The circular economy is an economic system that aims to minimize waste and maximize the use of resources. It differs from the traditional linear economy, where materials are extracted, processed, used, and disposed of. In a circular economy, materials are kept in use for as long as possible through strategies such as reuse, repair, refurbishment, and recycling. The circular economy is not only environmentally sustainable but also offers economic benefits such as cost savings, job creation, and increased resilience to supply chain disruptions. It requires a shift in mindset and business models, as well as collaboration among stakeholders across the value chain. The circular economy is gaining momentum globally as more businesses and governments recognize its potential to create a more sustainable and prosperous future. [1]–[3].

The implementation of a Spherical business model innovation (SBMI) leads to positive impacts on society and the environment, but it is difficult to implement because it requires interrelated changes to a company's business model

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and practices. The shift requires the modification of financial tools and operations to accommodate reverse logistics. The added value shifts from property to quick access, better choice, lower costs, and increased flexibility. The study of how businesses can make these transitions remains an important subject of study [4]. The SBMI process can benefit from using dynamic capabilities as a lens since these skills describe how businesses struggle by incorporating, forming, and reconfiguring their business models to fit to surroundings that are always shifting. They are taking on a greater amount of significance in a world that is getting more volatile, unpredictable, complex, and ambiguous (VUCA). The dynamic capabilities approach is useful in describing the invention of green and Spherical business models. However, little is known about the micro foundations of these skills and phases, particularly in large client-facing companies transitioning to a Spherical economy. Understanding lower-level practices and procedures can aid in developing strong dynamic abilities necessary for successful invention and long-term survival in a VUCA world. Shedding light on these practices is important for theoretical reasons and could help large organizations open advanced development trajectories, particularly for established firms seeking to promote good effects on society.

Within the scope of this study, we analyze the following research topic with a particular emphasis on SBMI as a change process: During the SBMI process, what kinds of practices and tools are helpful to corporations in the process of building dynamic capabilities? Following this, we will explore the theoretical foundations, then go on to the study method, findings, debate, and conclude about the lower-level practices and systems that enable strategic flexibility for SBMI [5].

2. Background

SBMI is a strategy for companies to address environmental concerns while maintaining their competitiveness. It involves making innovative changes to a company's infrastructure to reduce waste and increase the value of goods and materials over time. This section explores SBMI through a literature review, a discussion of the steps involved, and identifies research gaps. [6].

2.1. SBMI in the literature

To contribute to the development of a circular economy, major firms have initiated research into the feasibility of circular business models. Several studies have been conducted to investigate the obstacles that must be overcome to implement a circular economy in established businesses, including the textile industry. This study provides an overview of the phases of circular business model innovation, with a focus on large manufacturing companies that primarily sell to other businesses (B2B). The study recognizes a range of circular business model innovation actions, such as analyzing existing business models, adjusting them, and retesting and developing them, based on a diverse group of B2B companies. The study also identifies a two-stage process of ecosystem conversion, including evaluating ecosystem readiness, followed by initiating the environment for recycling and reuse. Both findings are primarily based on B2B firms. Based on these findings, the study defines a range of circular business model innovation actions [7].

Other research has looked into SBMI startup companies, small and medium-sized businesses, or a combination of the three. Additional examples include SBMI's collaborative efforts in particular industries, like the fast-moving consumer products market. In the related body of work on servitization, emphasis has been placed on the innovative actions and capacities of companies. Although frequently considered to be distinct from contemporary work on Spherical business models, there are apparent parallels between the two, as the majority of Spherical business models have a servitization component [8]. In digitized PSS, capability development of manufacturers, intermediaries, and customers is crucial. Digital confidence has a significant impact on customer attitudes towards PSS, especially in shared mobility. While PSS research has been successful in the business-to-business (B2B) setting, adoption in business-to-consumer (B2C) markets is relatively low due to the diversity and complexity of clients. PSS examples often focus on efficiency and recycling, rather than reusing and repairing materials. Finally,

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recent studies suggest that PSS are not inherently environmental, and ecological values may only be gotten through careful planning and construction of the system [9], [10], [10], [11].

2.2. SBMI as a change process

The concept of SBMI involves the creation of financially viable and sustainable business models that advance competitiveness through constant reinvention. The process of SBMI can be characterized by four stages: envisioning, perceiving, seizing, and transforming. These stages reflect the process of change and are similar to the phases of business model innovation described in the literature. Envisioning involves setting the stage for any Spherical innovation by establishing a vision and goals for a Spherical economy. Perception is the process of surveying the market to identify unfulfilled demands and promising new ventures, while seizing an opportunity involves marshalling the necessary resources within an organization to investigate and evaluate it. Constant reinvention or transformation is necessary to maintain viability in highly dynamic markets. The decision to switch to a Spherical economy represents a distinct first step in the SBMI process. Companies included in case studies have established Spherical vision and goals as a prerequisite to implementing complicated SBMI. The four stages of SBMI can be used to analyze the current literature on the subject. By using an innovative diffusion lens, researchers can detect, try to seize, and turn innovation into a sustainable business model. The perception and seizing stages can be used to identify unfulfilled demands and opportunities in the market, while the transforming stage can be used to implement sustainable business models that maintain competitiveness and advance sustainability goals.

Research has been conducted into management resources to aid the business model innovation process, with several studies finding that businesses often employ methods and techniques derived from Lean Enterprise, Participatory Design, and the Business Model Canvas. Environmental problems have also been handled with Lean Startup techniques, and sustainable updates to the original Business Model Canvas have been developed, such as the Triple Bottom Line Canvas, the Flourishing Canvas, and the Spherical Canvas. While several tools have been developed to aid in the transition to a Spherical economy, there has been minimal testing of academically developed tools and processes in commercial settings, and it is unclear whether these technologies are being used regularly. Additionally, the literature review approach did not permit investigation into how any of these SBMI instruments were really employed. The paradigm of strategic flexibility can aid in understanding SBMI and the economic transition to a Spherical economy. Key capabilities and processes have been recognized in the supplementary literature on PSS, although without a Sphericality focus.

3. Methodology Design

The article discusses the use of qualitative research methodologies, specifically theme analysis, to examine the process and practices of SBMI. Thematic analysis is used to gain a complete and detailed view of the dataset, and a realist strategy is employed to delve into SBMI routines, including what people do on a daily basis, the tools they use, and the beliefs and motivations driving their actions. The research involved interviewing enterprise leaders who have pioneered new business models in the Spherical economy using a semi-structured format.

3.1. Recruitment and data collection

Recruitment and data collection are critical components of any research study. In the context of the article's analysis of large firms that have embraced SBMI, recruitment involved identifying companies through a random sampling conducted through the Ellen MacArthur Foundation. To be considered for an interview, participants needed to have hands-on experience with SBMI, and they were given a project brief defining SBMI to ensure a common understanding. The participants were typically enterprise leaders who have pioneered new business models in the Spherical economy, and the study focused on large firms with consumer-fronting goods that have pursued SBMI for at least five years and have clearly stated Spherical service business model experiments, objectives, and strategies. In addition, we chose businesses that demonstrated more advanced forms of SBMI, prioritizing not only recycling but also product reuse as segment of the privileged "R" approaches in the garbage pyramid. Companies H&M,

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IKEA, and Philips were chosen based on these criteria. For a complete list of potential alliances, please refer to Table I. In order to be considered for an interview, a person needed to have some sort of hands-on experience with SBMI. The participants in the interviews were given a project brief that defined SBMI in order to reach common ground. For a breakdown of the SBMI projects brought up in our interviews, please refer to Table II.

Table 1: The selection of samples according to strategic partners.

Collaborate with B2C focus	Focus on SBMI ($>= 5\ years$)	Data access	Sample
Unilever	×	×	×
Solvay	×	×	×
Philips	✓	✓	✓
IKEA	✓	✓	✓
H&M Group	✓	✓	✓
Groupe Renault	×	×	×
Danone	×	×	×

Table 2: Categorization of business models according to spherical enterprise archetypes.

Empty Cell	Philips	H&M	IKEA
Restoration & conservation	A Membership to Philips Lumea	Start Caring Programs	Marketplace for maintenance and replacement parts; Cleansing as a Service
Reuse & redistribution	A Membership to Philips Lumea, Filtering the air for a fee	Rental trial Re-commerce	Recycled store Buy-in return systems Rental services
Refurbishment & remanufacturing	Reconditioning of medical gear	Refurbishment of fashion	Product as a service, Buy-in return systems, Renovation as a service.
Recycling	Reprocessed materials	Recycling initiatives	Buy-in return systems

3.1.1. H&M Group: fashion

The H&M Group is a multinational company that operates approximately 5000 physical stores in 73 countries, with around 153,000 employees. The company has a goal of becoming a fully Spherical business and has a Sphericality vision that includes eliminating the use of nonrenewable resources by 2030 and achieving a "climate positive value chain" by 2040. H&M has declared plans to make 100% of its packaging either disposable, repairable, or compostable and has already developed an EPR framework for product take-back after first usage in its efforts to achieve these goals.

3.1.2. IKEA: furniture

IKEA is a furniture and home furnishings company founded by Ingvar Kamprad in Sweden in 1943. The company's mission is to provide high-quality, well-engineered products at affordable costs, and it began selling flat-pack, self-

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assembly furniture in the 1950s to reduce the difficulties and high cost of delivering heavy, bulky furniture. IKEA has expanded to over 50 markets, with approximately 422 stores, and franchisees pay a yearly fee of 3% of net sales to market and sell IKEA products. The company's goal is to have all its goods designed to be completely recyclable and reused. IKEA offers modular and upgradable options, as well as products built entirely from recycled wood or plastic.

3.1.3. Philips: health technology

Philips is a health technology firm established by Cornelis Philips in 1891 and now operates in over 100 different nations with 80,000 employees. The company has shifted its focus to environmental sustainability through its Zero Waste strategy, 100% eco-design, increased power performance, improved sustainable energy production, and Spherical economy solutions. It has set ambitious targets for the year 2025, including a 25% increase in revenue from Spherical goods, facilities, and alternatives, full device cycle for all decent equipment, adoption of Spherical practices across all facilities, and high recycling rates of 100%. Philips' dedication to environmental sustainability is reflected in its collaboration with the Ellen MacArthur Foundation, which helped propel the concept of recycling and reuse to the forefront.

3.1.4. Interviewees

The interviewee process for SBMI typically involves interviewing individuals in various roles across the organization, as well as external stakeholders such as suppliers, customers, and partners. The roles of interviewees may include executives, managers, department heads, team leaders, and employees involved in different aspects of the business, such as product development, marketing, operations, finance, and sustainability. The time spent with each interviewee may vary depending on their role and level of involvement in the SBMI process. For example, executives and managers may require longer interviews to discuss high-level strategy and decision-making, while employees involved in day-to-day operations may have more specific insights to share about the implementation of new business models. In general, the interview process should be designed to gather a comprehensive understanding of the organization's current business model, as well as its strengths, weaknesses, opportunities, and challenges. Interviewees should be asked open-ended questions that allow them to share their perspectives and experiences, as well as their ideas for improving the business model. The interview process should also include external stakeholders such as suppliers, customers, and partners, who can provide valuable insights into the organization's relationships and interactions with the broader ecosystem. The time spent with external stakeholders may vary depending on their level of involvement, but it is important to ensure that their perspectives are considered in the SBMI process (see Table III).

Table 3: Summary of interviewees made for each company.

Company	**Interviewee role**	**Time (minutes)**
H&M	Business developer – sustainable and Spherical business models	30
	Spherical business development	42
	Spherical business development	60
	Spherical business innovation lab	98
	Inclusive sustainability & Invention & cultivation	63
	Improvement & evolution	50
	Project Manager, Global Sustainability	39
	Sustainability controller	93
	Sustainability project manager	68

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	Sustainable business development	38
Philips	Design Business Partner	67
	Program manager Spherical Economy	68
	Senior Designer, Spherical Economy	78
	Senior Director Sustainability	69
	Service designer	18
	Start-up venturing lead	32
	Subscription accelerator leader & Group Sustainability – Innovation and Strategy (joint interview)	22
	Sustainable business development, including Spherical economy	94
IKEA	Manager Spherical Economy (3)	73
	Worldwide Commerce Leader, Spherical Economy experts	79
	Head of Spherical business development	41
	Spherical Supply Chain Project Leader	51
	Spherical commerce engineer	9
	Spherical products create and evaluation lead	44
	Spherical commerce designer	32

The following topics were covered in the semi-structured questioning. First, the many kinds of businesses that the respondents have tried out. Procedures and methods. Third, Results, and whether or not the Spherical business model was able to scale.

3.2. Data analysis and interpretation

The standard procedures of thematic analysis were followed to analyze and interpret the data: This process includes six steps: (1) becoming acquainted with the (subjective) data; (2) ascribing preparatory rules to the information to describe the subject matter; (3) looking for topics in the norms throughout the interview sessions; (4) reviewing themes; (5) trying to define and identify themes; and (6) generating final outcomes. Seventh, we validated the results with the company to make sure there weren't any misunderstandings about the process or the practices (7).

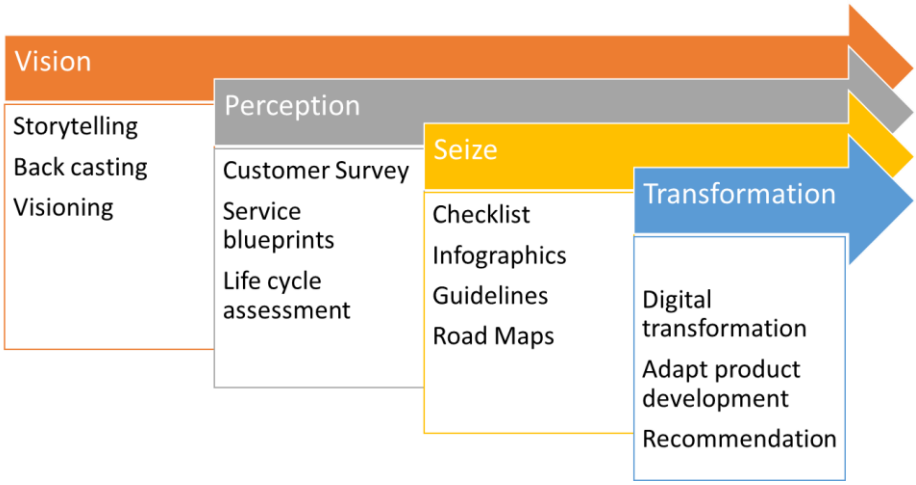

Figure 1: Illustration of the SBMI procedures and implements throughout visioning, perception, seizing, and transformation.

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The tool Atlas.ti was used for iterative coding of interview data collected by the authors. Both authors coded the interviews separately at first, then debated and settled any discrepancies they found in Steps 1-3. Each corporation's data and processes within their unique Spherical business model were individually analyzed first (Step 1). The coding was supported by overarching themes, such as the different kinds of spherical business models, procedures, practices, tools, and methods, and proof of scalability (Step 2). In this way, topics like "type of business model," "procedures," "tools and methods," and "scalability" were identified and programmed by the authors. After that, the authors assessed if these matched visioning, perception, seizing, or transforming stages and began to grasp the kinds of commonalities that existed already across the interviewees and the businesses (Step 3). Following the advice of [12], we used thematic coding to determine the most important practices, processes, and tools by identifying topics that were discussed by all three companies and comparing and contrasting the responses we received. Again, the authors went through several rounds of independent and then joint coding before settling on the last premises (6). The last edition of the analyzed data, summarized in Fig. 1 and the transcript in Portion 4, was proffered back to selected respondents in each of the corporates to check for glaring errors, mischaracterizations, or exclusions of key practices or procedures, as well as for the removal of any confidential issues that needed to be removed (7). The final round of validation did not result in major changes to the coded procedures and processes, but it did result in some tweaks to the names of certain programs and projects (e.g., refurbishment). Through these measures, comprehensive SBMI procedures and granular SBMI practices and tools were identified.

The following sorts of Spherical business models were identified to be experimented with by the companies: restoration and repair, recycling and redistributed, refurb and recycle materials, as well as membership, renting, purchase, and secondary providing kinds. Table II provides a comprehensive summary of the detected business models, which are then arranged into categories in accordance with the spherical business models described [2].

4. Results: SBMI practices and tools

The study categorized SBMI activities and tools based on high-level phases and dynamic capacities of visioning, perceiving, grabbing, and reforming, with a summary provided in Figure 1. The study aims to evaluate and promote the acceptability, practicality, profitability, and sustainability of Spherical business models while considering desirability, feasibility, sustainability, and viability. It also aims to collaborate to construct regionally appropriate Spherical ecosystems. Companies use various techniques and methods to achieve these goals in each phase, which are outlined in detail in the study. Facets of SBMI tool are given in Table IV

Table 4: Proportions for SBMI tool division.

Tool Type	**Guidelines**	**Checklists**	**Analytical Tools**
Nature	Qualitative/Quantitative		
SBMI Stage Application	Envisage and design	Execute and test	Assess and get better

4.1. Visioning

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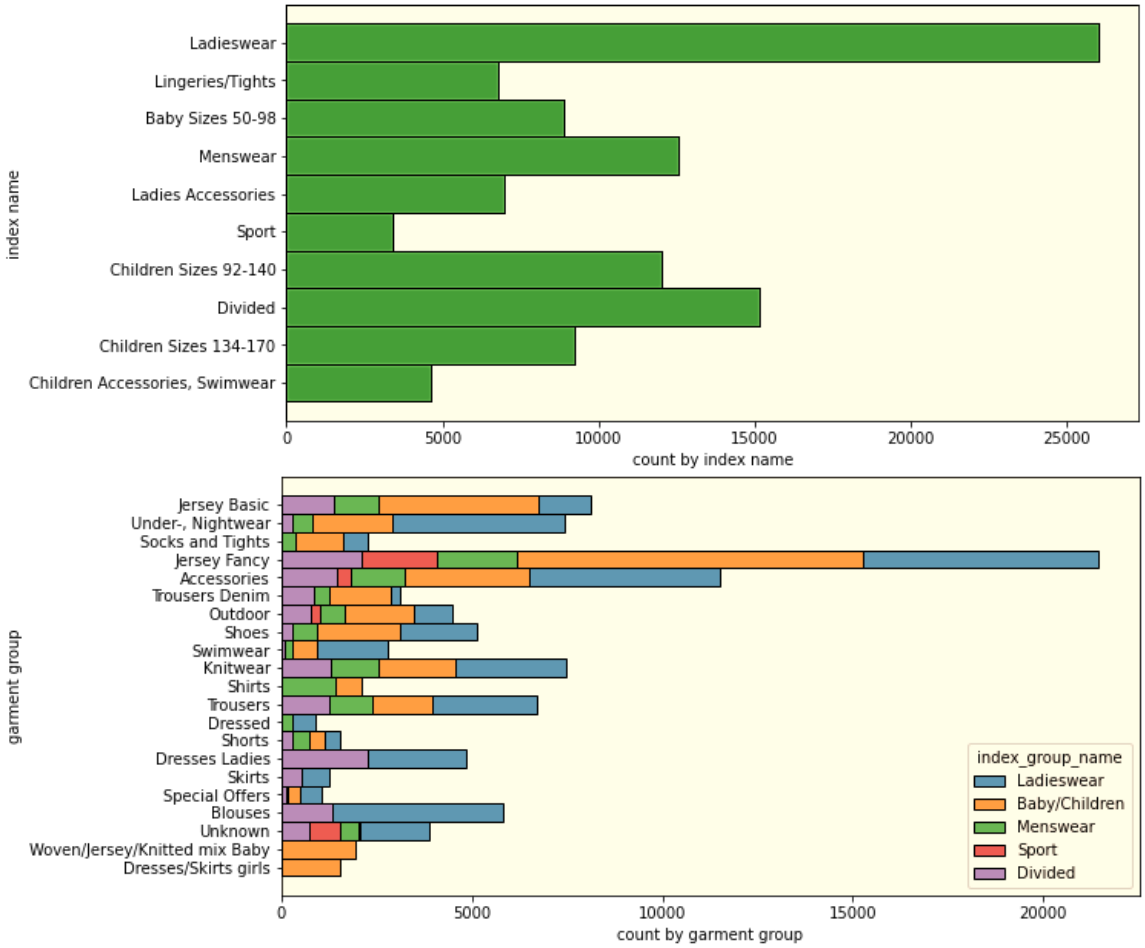

Figure 2: Visualization of data distribution in our H&M case study.

The study found that development of the Spherical business model begins with the formulation of an aspirational and holistic perspective for the Spherical economy, as well as audacious goals that go beyond financial success. The goal of a Spherical economy is endorsed by top-level management, providing a mandate for action. However, there is uncertainty about how these ideas can be realized, which drives the need for SBMI. The respondents noted that without SBMI, it will be extremely challenging to make headway toward the lofty objectives. Major behavior change on the part of consumers is necessary, which has become an integral element of the duties of those interviewed. In the H&M case study, exploratory data visualization can be used to gain insights and identify patterns in the data. Exploratory data visualization is used to visually explore and analyze data. It can help to reveal relationships, trends, and patterns that may not be immediately apparent from raw data (see Figure 2). One example of exploratory data visualization in the H&M case study would be to create a frequency plot of sales garment_group_name data against count to identify any trends or patterns in sales over time. This could help H&M identify any seasonal trends in sales or any changes in customer buying habits over time. H&M could use this information to adjust their inventory or marketing strategies accordingly. Another example of exploratory data visualization would be to bar plot of index name demographics to identify any patterns in index distribution.

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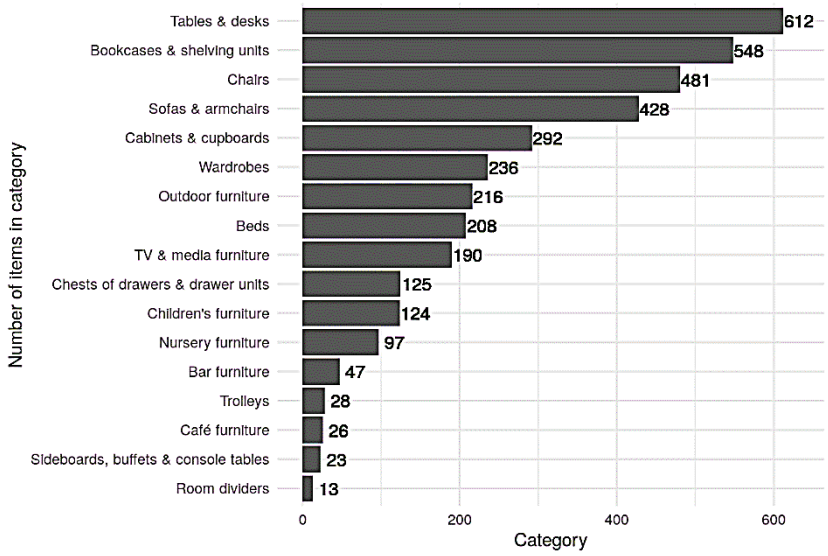

Figure 3: bar plot visualization for item frequency per category on IKEA case study

4.2. Perception

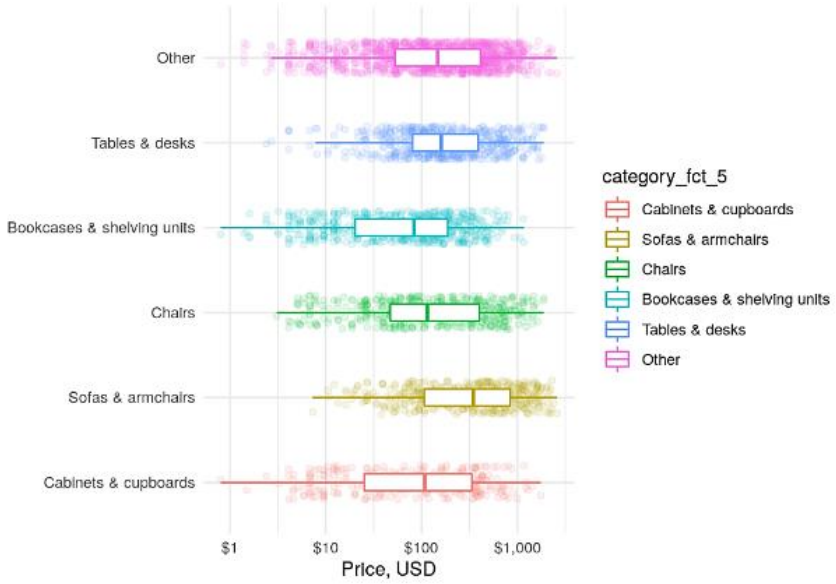

Figure 4: box plot visualization for price distribution IKEA case study

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The study found that during the "sense" stage of SBMI, interviewees actively seek and evaluate novel concepts and opportunities by using various methods to gain a deeper understanding and insight into customer behavior. They imagine fresh Spherical business models, complete with hypotheses and research inquiries, and determine the model's environmental performance using accelerated Life Cycle Assessment or rules of thumb. During the "perception" stage, innovators seek out customer engagement to assess interest and establish the correct value proposition. They use research instruments to gather information about the attractiveness of product take-back programs, previously owned products, and subscriptions. The viability of the business model is also validated by creating a solid financial business case. Capabilities essential to Spherical business models, such as reverse logistics or Spherical product design, are analyzed during this stage. Legal teams assess the operational and legal feasibility of novel company models in diverse circumstances. The study also found that SBMI's eco-systemic structure governs the form of internal collaboration among innovators, and local teams can adapt and expand upon the model while the central team provides the necessary backing, direction, and platform.

Table 5: elementary analysis of IKEA case study data.

	Unnamed: 0	item_id	price	depth	height	width
count	1899	1.90E+03	1899	1899	1899	1899
mean	1712.458	4.88E+07	1220.627	56.1564	113.1095	119.752
std	1071.261	2.92E+07	1422.089	30.5795	62.74888	77.51521
min	3	1.17E+05	6	1	2	2
25%	799.5	2.03E+07	295	40	71	60
50%	1653	4.93E+07	680	47	92	93
75%	2474.5	7.04E+07	1589	60	171	161.5
max	3688	9.99E+07	9585	257	301	420

In the IKEA case study, we use a bar plot to count the number of items per category (see Figure 3). As shown, Tabled and desks are the most frequently available. Box plot visualization is also used to analyze the price distribution of products. A box plot is a graphical representation of the distribution of data based on five summary statistics: minimum, first quartile (Q1), median (Q2), third quartile (Q3), and maximum. In the context of the IKEA case study, the box plot (see Figure 4) is used to visualize the price distribution of products across different categories by comparing the price distribution of furniture products to textile products. The visualized information can be used to make decisions about pricing strategies, product development, and marketing campaigns. Additionally, box plot visualization can help IKEA identify any potential issues with pricing, such as products that are consistently priced too high or too low compared to their category average.

4.3. Seizing

The study found that during the "seizing" stage of SBMI, new business models are defined and validated by experimenting and piloting. The goal is to find common ground between competing goals and provide a solution that benefits the client, the company, and the environment. Innovators may work independently or with others to set up collaborative experiments and pilot projects with strategic allies. The decision to go it alone or work with others is based on internal availability of the required capabilities and whether they can be created independently or with external partners. The ability to scale procedures is another factor in determining whether to work together. Stakeholders, such as NGOs, may also work together on sustainability goals or strengthen the proposition from a social sustainability angle. The Minimum Viable Product (MVP) is a stripped-down form of a product that may be released quickly and at a minimal cost to test parts of a business model. Statistical analyses are also used to launch two or more versions of an advertisement or (mock) website to test the value propositions (Table V).

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4.4. Transformation

The study found that in the final stage of SBMI, the necessary adjustments to organizational structures and routines are made to integrate the new business model into regular company procedures. Scaling up proven possibilities in a variety of settings is important, and the process of transforming requires a shift in attitude from a sales-oriented mindset to a life cycle perspective. Participants in the interviews expand certain models, put them into action in a greater number of cities or countries, and look for chances to expand the provision to new categories of products or lines of business. The capability to scale also pertains to the adaptability of the product development process over the full product range. The study also found that experimenting with one company area can generate a lot of interest in trialing other businesses, and establishing a culture that encourages innovation is important. However, the stage of transformation is the least developed, both in regard to the existing status quo among professionals and in respect of the conceptual underpinnings of how to negotiate this procedure (See Figure 5).

5. Debates and Analysis

The research focuses on the process of creating Spherical business models and identifies the foundational SBMI procedures and resources that make the capabilities dynamic. The study highlights the importance of visioning and the need for businesses to have a variety of conversations to put this knowledge into action, including the formation of multi-disciplinary workgroups to establish a bold CE vision. The process of SBMI serves two goals: validating the new business model and shaping locally appropriate Spherical ecosystems. However, the transforming step of SBMI is the weakest link in the chain, and strategies and instruments to foresee the effects of SBMI on sustainability are required.

The study establishes that the regulatory environment has a crucial role in determining how these new Spherical business models can be transformed and scaled. The viability of Spherical business models will increase once the conveyed budget of commercial activities on society and the surroundings becomes suppressed. Furthermore, the study concludes that an aspirational, lasting, time-bound, and quantifiable prediction of the ideal coming Spherical economy is the starting point for the SBMI process. The process of creating Spherical business models is a constant source of tension during the transformation phase of SBMI, making it one of the most unclear and underdeveloped. Therefore, strategies and instruments to foresee the effects of SBMI on sustainability are required, and the regulatory environment plays a crucial role in determining how these new Spherical business models can be transformed and scaled.

5.1. Shortcomings

The study has some limitations due to its methodology, and the results should be interpreted with caution. The research was based on interviews with important innovators rather than observing the techniques over time in their actual business setting. The COVID-19 outbreak also complicated observatory procedures, and the study was conducted through video conferences to ensure safety. While this method offered advantages such as ease and safety, there were also drawbacks such as technical difficulties or non-appearances at scheduled interviews. Additionally, the study sample size was small, and a larger sample size would have provided more insights and verified the reliability of the findings. Further research is needed to expand on the study's findings and learn how corporate innovators are actually implementing sustainable practices and shifting their organizations toward a Spherical economy [13], [14].

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6. Conclusions

This work investigates the Spherical Business Model Innovation (SBMI) framework to provides businesses with a structured approach to transform their sustainability practices and create new opportunities for growth. By focusing on circularity, resilience, and local adaptation, SBMI can help businesses engage with clients and stakeholders, while also reducing their environmental impact and increasing their economic viability. Using exploratory data visualization, box plot visualization, and interviews with diverse stakeholders, businesses can gain valuable insights into their current business model and identify opportunities for improvement. The SBMI framework emphasizes the importance of visioning, perception, seizing, and transforming in the process of creating new business models that are both desirable and sustainable. As businesses increasingly recognize the importance of sustainability in achieving long-term success, the SBMI framework can serve as a valuable tool for transforming business sustainability and driving client engagement and growth.

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