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KAUNAS FACULTY

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MASTER'S THESIS

IMPLEMENTATION OF SUSTAINABLE BUSINESS MODELS IN
INTERNATIONAL COMPANIES

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LIST OF ABBREVIATIONS

BM – Business Model
BMI – Business Model Innovation
C2C – Cradle-to-Cradle
CE – Circular Economy
CSRD – Corporate Sustainability Reporting Directive
ECO – Economic Performance
EFB – Economic and Financial Barriers
ENV – Environmental Performance
EPR – Extended Producer Responsibility
ESG – Environmental Social Governance
EU – European Union
EVs – Electric Vehicles
GDP – Gross National Product
GHG – Greenhouse Gas emission
KPIs – Key Performance Indicators
LCA – Life Cycle Assessment
MNC – Multinational Company
MNCs – Multinational Companies
MVP – Minimum Viable Product
NGOs – Non-Governmental Organizations
OCB – Organizational and Cultural Barriers
PSS – Product Service System
RBV – Resource-Based View
SBM – Sustainable Business Model
SBMs – Sustainable Business Models
SBTi – Science Based Target initiatives
SDG – Sustainable Development Goals
SEC – Securities and Exchange Commission
SOC – Social
SSB – Systemic and Supply Chain Barriers
TBL – Triple Bottom Line

U.S – United States

UNEP – United Nations Environmental Program

VRIO – Valuable Rare Inimitably Organized Organizationally supported

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INTRODUCTION

The relevance of the topic. The implementation of sustainable business models (SBMs) is an increasingly important topic for research, academia, and the world today due to the convergence of several critical global challenges, shifting market dynamics, and the growing recognition of business responsibilities towards social, environmental, and economic sustainability. SBMs have become a topical theme among companies and researchers due to their far-reaching implications for global economic, ecological, and social systems. SBMs are directed to solving economic, environmental, and social issues that businesses create to help preserve the planet for current and future generations. It is the key to innovation in companies. It becomes more important to set things right as a shift from traditional business operations to a more transparent and responsible way of doing business is of great concern to everyone. There is a global call on all companies to implement sustainable business models in their operations so that their actions or inactions do not create negative externalities to lives and the environment. Hence, the need for companies to put in place sustainable business models to meet sustainable development goals.

Research in this area explores how international companies navigate complex regulatory environments, cultural differences, limitations placed by technology and innovation, and stakeholder expectations to achieve sustainable development goals (SDGs), otherwise known as Global goals in their day-to-day operations. This topic is particularly important as it provides insights into how companies can achieve long-term profitability while addressing topical issues such as climate change, ethical concerns, and resource scarcity. International companies, also known as multinational companies (MNCs) drive economic growth since their activities create jobs, engage in production and consumption in every economy, they must behave responsibly by ensuring that they create value for all their stakeholders. They also must ensure they address global environmental and social challenges such as climate change, resource depletion, waste management, energy consumption, carbon footprint, and as well engage in activities that will make the world a better place for current and future generations.

Technological innovation and digital transformation in the knowledge economy provide limitless opportunities for businesses to leverage to create value and ensure they are utilizing this opportunity to benefit all stakeholders. Converting the limitations placed on businesses and humans by technology to our advantage in renewable energy, AI, blockchain, and big data analytics creates a platform for MNCs to implement SBMs more efficiently. The use of digital tools enables companies to track sustainability metrics, reduce waste, improve energy efficiency, and leverage technology for ethical sourcing, waste reduction, and responsible production to achieve sustainable supply chains. Implementing SBMs will

help MNCs better manage risk and become resilient in the long run. SBMs are the adoption of best practices that will help businesses to remain resilient to economic crises, supply chain disruptions, market volatility, and many other contingencies. Companies that integrate sustainability into their operations have better crisis management and long-term stability. Implementation of SBMs also enables businesses to achieve most of the Sustainable Development Goals, if not all. Research on the implementation of sustainable business models in international companies is relevant to add knowledge to existing literature, inform policy direction, and business strategy. Implementation of SBMs is strategically necessary for long-term sustainability and business success.

Problem investigation level. The issue of sustainability is very necessary for businesses in our era of global flow and digitization. Scholars have researched the development of sustainable business models at various levels over decades with some exploring aspects such as development of these models and the role of innovation; however, the implementation of these models by international companies has not been explored enough. SBMs evolved from sustainable development and innovation but there is no standardized framework to assess the effectiveness of SBM (Karuppiyah, Sankaranarayanan, & Ali, 2023). Most SBMs focus on manufacturing industries (Karuppiyah et al., 2023). It suggests research across industries other than manufacturing and energy sectors. The widening of research scope to how different business sectors adopt and adapt SBM elements to meet sustainability goals (Olusola-Christwealth, & Kiaušienė, 2023). This also requires future exploration on how businesses make progress from traditional models to SBM (Ferlito, & Faraci, 2022).

International companies are becoming increasingly aware of the consequences of their actions on the environment; however, resistance to change and other factors render implementation inactive. Incorporation of environmental, social, and governance (ESG) factors enables companies to position themselves better and this helps to achieve stakeholder trust (Lüdeke-Freund et al., 2020). Research is required on the barriers companies face when transitioning to SBMs (Olusola-Christwealth & Kiaušienė, 2023). Further studies should focus on identifying and overcoming barriers in implementing SBMs (Gazzola, Drago, Pavione, & Pignoni, 2024). Further study of best practices for businesses to effectively implement and scale sustainable initiatives (Olusola-Christwealth & Kiaušienė, 2023).

Since SBMs stem from sustainable development and innovation, it is imperative to implement innovative strategies and frameworks in business operations. Further studies should focus on how digital tools can enhance transparency, efficiency, and sustainability in businesses (Olusola-Christwealth & Kiaušienė, 2023). The effectiveness of green technologies in reducing environmental impact should be explored further (Gazzola et al., 2024). Future studies should examine the role of government policies and incentives in promoting SBM innovation (Ferlito & Faraci, 2022).

The essence of the problem. How should sustainable business models be implemented in international companies?

The object of the thesis is the implementation of sustainable business models in international companies.

The aim of the thesis is to investigate the factors determining the implementation of sustainable business models in international companies.

Objectives of the thesis:

1. To summarise the concepts of sustainable business models.
2. To examine strategies and key drivers associated with the implementation of SBM in international companies.
3. To synthesise research on the implementation of sustainable business models in international companies.
4. To provide a model for the implementation of sustainable business models by international companies.
5. To investigate the links between internal and external factors determining the effectiveness of implementing sustainable business models in international companies.

The structure of the thesis. This thesis is presented in three parts.

The first part “THEORETICAL ASPECT OF SUSTAINABLE BUSINESS MODELS AND INTERNATIONAL COMPANIES” introduces and defines concepts of sustainability, sustainable business models, strategies international companies adopt to implement sustainable business models, and identifies the drivers and barriers of implementing sustainable business models.

The second part, “EMPIRICAL RESEARCH LEVEL ON THE IMPLEMENTATION OF SUSTAINABLE BUSINESS MODELS IN INTERNATIONAL COMPANIES.” This is presented in two parts: the first subsection summarizes research on the implementation of sustainable business models in international companies, and the second subsection develops a research model for their implementation.

The third part, “EMPIRICAL RESEARCH ON THE IMPLEMENTATION OF SUSTAINABLE BUSINESS MODELS IN INTERNATIONAL COMPANIES.” This is presented in three aspects: the first subsection, research methodics on the implementation of sustainable business models in international companies, the second subsection, research data analysis and discussion of results, and the evaluation of research results are provided in this sub-section.

Thesis and research methods. The theoretical and analytical aspects were carried out through a comparative analysis and synthesis of scientific literature sources on definitions, concepts, theories, and case studies of sustainable business models in international companies. Sources such as academic journals, industry reports, online publications, and sustainability information were used. The empirical part of the study was done by the use of a quantitative questionnaire survey method and analysis of the obtained data with SPSS 31.0 in order to explore the direct relationship between internal and external factors in determining the effectiveness of implementing SBMs in international companies.

Literature used in the thesis. The theoretical part of the master's thesis used works by foreign authors and articles related to the concept of sustainable business models (SBMs), their practices, and concepts of sustainability, since SBMs stem from sustainability and innovation. The main references are Mio, Panfilo, & Blundo (2020), Ellen MacArthur Foundation (2013), Geissdoerfer, Savaget, Bocken, & Hultink (2018), Evans, Vladimirova, Holgado, Van Fossen, Yang, Silva, & Barlow (2017), Ogorean, Herciu, and Tichindelean (2024), Ademi, Sætre, and Klungseth (2024), Carpitella and Izquierdo (2025), Azimi and Saleh (2025), and other authors related to the topic of sustainable business models and sustainability.

The theoretical significance of the thesis. The implementation of SBMs in international companies is very important in the new era of business, when the linear model of businesses has failed to reconcile environmental and societal needs with economic growth. SBMs serve as a driving force for international companies to redefine the creation of value, innovate to remain relevant in the business space, and address global challenges facing the world. Identification of various SBM concepts gives companies more options to choose from, as it bridges the gap in sustainability transition literature by putting this study in context for scalability.

The main aspects of SBM identified include systematization of definitions, concepts, and strategic approaches by which international companies attain sustainability. International companies, for that matter, multinational corporations, play a crucial role in the implementation of SBMs to achieve sustainable development goals (SDGs). This work identified barriers international companies face when they implement SBMs; however, they are driven by innovation, value creation, and other factors that make them resilient and long-term oriented for prosperity. Assessing the empirical aspect, it was revealed that international companies implement sustainable business models in many ways, depending on their core business and the concept that is adaptable for their operations. The use of innovative techniques and technology, supportive government policies, and collaboration with all stakeholders enable them to scale through the challenges they face in implementation. This eventually positions them better, enhances their image, and creates more opportunities for growth for the implementing companies. This thesis is centered

around shaping future generational business theories that make planetary boundaries and societal well-being priorities together with profitability.

The practical significance of the thesis. A Pollmill Survey questionnaire was designed and distributed across social networks and emails based on the literature reviewed on concepts, definitions, barriers, and strategies of the implementation of sustainable business models in international companies, from which information was collected and analyzed. This data enriches the literature on the implementation of sustainable business models in international companies. The model deduced from the results of this survey can be used by businesses to shape future business and align them with sustainability practices.

The data analyzed shows that the triple bottom line theory is the basic theory on which others were built. It is universal and applicable to all businesses, irrespective of company size or industry sector. Therefore, managers and entrepreneurs will draw from these findings to implement sustainable business models in their organizations and businesses, whether big or small.

The findings in this research result apply to managers of companies, suggesting that proactive leadership, strong organizational culture, employee engagement, and resource allocation enhance the image of their businesses and make them relevant and timeless.

The relationship between internal and external factors, SBM implementation, and SBM effectiveness is necessary for policymakers to provide a well-organized regulatory framework, market incentives, and support for businesses in their catchment areas to enhance the prosperity of their citizens.

Future researchers should explore the mediation pathway more closely — specifically, what aspects of implementation quality most strongly carry the influence of internal and external factors through to the effectiveness of SBM implementation.

Limitations and obstacles of the thesis. The study covers the implementation of sustainable business models in companies located in Lithuania and Ghana, with a greater concentration on international businesses. This research was constrained by the time for data collection. The questionnaire distribution was by convenience sampling. Common method bias is a potential concern in self-report survey research. This is a snapshot view of the reality at this particular point in time. The perception may vary at any other time. The 38.5% unexplained variance in SBM Effectiveness from the evaluation of results suggests that additional determinants, for example, supply chain sustainability, technological innovation cycles, and geopolitical dynamics, may have to be investigated in future research. There was a missing figure of 21 responses in question 8, representing 15.3% of the total sample, which could affect the result of the study aspect on familiarity with SBM by respondents, as this was handled by adding them to the “no” response.

Authorisation of results. The results of this study were presented and validated at the 20th Prof. Vladas Gronskas International Scientific Conference on May 8, 2026. The link to this conference is shared here <https://www.knf.vu.lt/en/20th-gronskas-international-conference#programme> to the abstract, and a certificate of participation is attached in the appendix as evidence of this validation.

Structure and scope of the thesis. The master's thesis consists of an introduction, 3 parts, and a conclusion. The thesis is presented in 77 pages, 5 figures, and 23 tables. The list of references consists of 137 references.

1. THEORETICAL ASPECT OF SUSTAINABLE BUSINESS MODELS AND INTERNATIONAL COMPANIES

This part has three main subheadings. First, various concepts of SBM, as identified by various authors, are defined and synthesized. Theories of international business and sustainability are identified in the second sub-chapter. The third subchapter identifies various drivers and barriers international companies face when implementing SBM.

1.1. Definition and concepts of sustainable business models

In recent times, the concept of **sustainability** has gained great traction across all business sectors. Sustainability is a long-term goal, and the process by which sustainability is achieved is described as sustainable development. Societal pressure demands commitment from the industrial sectors to sustainable development (Vasquez, Aguirre, Fuquene-Retamoso, Bruno, Priarone, & Settineri, 2019). From the industrial perspective, the concept of sustainability emphasizes industrial activities and communications with the stakeholders, which focuses on the objectives of sustainability at the organizational, environmental, and societal levels (Mio, Panfilo, & Blundo, 2020).

The Brundtland Commission defines sustainability as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development [WCED], 1987, p. 43). The Triple Bottom Line (TBL) measures business success and, for that matter, sustainability by the three Ps, namely: people, planet, and Profit (Elkington 1997), the moment started working toward a triple helix for value creation, a genetic code for tomorrow's capitalism, spurring the regeneration of our economies, societies, and biosphere (Elkington 2018), a solution to the environmental and societal problems we have been facing, as settled and established in the Millennium Development Goals (MDGs) (Loviscek, 2021). According to the Sustainable Development Goals (SDGs), Sustainability is a global framework of 17 interconnected goals that address poverty, inequality, climate change, and ecological degradation (United Nations, 2015). The doughnut economics considers sustainability as operating within planetary boundaries while ensuring social foundations for all (Raworth, 2017). Sustainability by the Natural Step framework requires eliminating systematic overexploitation of nature and ensuring fair resource distribution, by which we create a shared language so that we may work together for effective and desirable change. (Robèrt, Broman, & Basile, 2013). *Definitions from various authors point to the fact that sustainability requires specific actions carried out intentionally to achieve a long-term goal of resilience, success, and prosperity for a common future. Earlier authors, such as WECD 1987 and Elkington 1997, provided*

foundational definitions upon which all other authors generate their definitions, expanding basic concepts in various dimensions for better understanding and application towards the desired result. Sustainability is a broader picture from which SBMs are developed.

Sustainable Business Model is a model where sustainability concepts shape the driving force of a business and its decision making (Stubbs, & Cocklin, 2008), a holistic framework that embeds sustainability principles into the design of value creation, delivery, and capture mechanisms, balancing stakeholder needs with planetary boundaries (Bocken et al., 2014, p. 42), prioritize the triple bottom line namely: people, planet, and profit which align business activities with environmental stewardship, social equity, and economic resilience (Elkington, 1997), redefine value propositions to decouple economic growth from resource consumption, focusing on longevity, inclusivity, and regenerative practices (Stubbs & Cocklin, 2008, p. 103). SBM adopts circular principles of closed-loop systems to eliminate waste and retain resource value (Ellen MacArthur Foundation, 2015). SBM applies multi-stakeholder partnerships to address systemic challenges like climate change and inequality (Freeman, Phillips, & Sisodia, 2020), and builds resilience by embedding flexibility to adapt to ecological, regulatory, and market shifts (Lüdeke-Freund et al., 2018). A sustainable business model can be defined as a simplified representation of the elements and interactions that a company uses to create, deliver, capture, and exchange value with the aim of achieving sustainable development for the company and its stakeholders while reducing environmental impacts and/or increasing positive social impacts (Geissdoerfer, Pieroni, Pigosso, & Soufani, 2020). A business model for sustainability helps describe, analyze, manage, and communicate (i) a company's sustainable value proposition to its customers and all other stakeholders, (ii) how it creates and delivers this value, (iii) how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries (Schaltegger, Hansen, & Lüdeke-Freund, 2015). A sustainable business model aims at solutions for [environmental, social, and economic] sustainable development by creating additional monetary and non-monetary value via the proactive management of multiple stakeholders, and that incorporates a long-term perspective (Geissdoerfer et al., 2018a, 2018b: 713–714 as cited by Chabowski, Gabrielsson, Hult, & Cavusgil, 2025). *SBMs aim to achieve long-term resilience while addressing global challenges such as climate change, resource depletion, and social inequality. SBMs survive on the principles of Sustainability and Innovation. Just as sustainability means long-term resilience, intentional ethical, and best practices to make the world a better place for current and future generations, these principles guide SBMs to strategically apply principles through collaboration with all stakeholders. Multiple definitions reiterate a holistic approach to business by focusing on monetary and non-monetary value, stakeholder*

engagement, and economic, social, and environmental well-being. Table 1 gives a chronological summary of the authors' definition of SBM.

Table 1

Definitions of a sustainable business model	
Authors	Definition
Elkington (1997)	Balances economic, environmental, and social goals through the Triple Bottom Line (TBL) framework. (People, Planet, and Profit to align business activities with environmental stewardship, social equity, and economic resilience)
Stubbs & Cocklin (2008)	Creation of value to align with sustainability by redesigning value propositions to decouple economic growth from resource consumption, focusing on longevity, inclusivity, and regenerative practices.
Bocken et al. (2014)	A holistic integration of sustainability principles into core value creation, delivery, and capture mechanisms by balancing stakeholder needs with planetary boundaries
Ellen MacArthur Foundation (2015)	Adoption of closed-loop systems and regenerative design that aligns with circular economy principles to eliminate waste and retain resource value.
Schaltegger, Hansen, & Lüdeke-Freund, (2015)	A business model for sustainability helps describe, analyze, manage, and communicate (i) a company's sustainable value proposition to its customers and all other stakeholders, (ii) how it creates and delivers this value, (iii) how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries
Lüdeke-Freund et al. (2018)	Achieving long-term resilience through adaptable strategies to address ecological challenges, market disruptions, and societal inequalities. Flexibility and long-term viability principles apply.
Elkington (2018)	Regenerative Capitalism: TBL was originally intended as a genetic code, a triple helix of change for tomorrow's capitalism, with a focus on breakthrough change, disruption, asymmetric growth (with unsustainable sectors actively sidelined), and the scaling of next-generation market solutions.
Freeman, Philip, & Sisodia. (2020)	Application of Multi-stakeholder partnerships to address systemic challenges like climate change and inequality
Geissdoerfer, Pieroni, Pigosso, & Soufani (2020)	A sustainable business model can be defined as a simplified representation of the elements and interactions that a company uses to create, deliver, capture, and exchange value to achieve sustainable development for the company and its stakeholders while reducing environmental impacts and/or increasing positive social impacts
Geissdoerfer et al., 2018a, 2018b: 713–714 as cited by Chabowski, Gabriellsson, Hult, & Cavusgil (2025)	A sustainable business model “aims at solutions for [environmental, social, and/or economic] sustainable development by creating additional monetary and non-monetary value.”

Source: created by the author based on various authors' definitions of sustainable business models.

Between 1990 and 2000, Foundational definitions defined SBMs by balancing economic, social, and environmental goals (Elkington, 1994; 1997). The 21st-century definitions between 2001 and 2020 revealed modern systemic approaches, such as circularity by closed-loop systems, regenerative practices, resilience, and stakeholder collaboration (Stubbs & Cocklin, 2008; Bocken et al., 2014; Ellen MacArthur Foundation, 2015; Lüdeke-Freund et al., 2018; Freeman, Philips, & Sisodia, 2020). Recent practices combine circularity, social equity, and digital tools for resource optimization, which remain imperative to address global challenges and achieve SDGs on schedule.

Stubbs & Cocklin, (2008) agree with Mio Panfilo, & Blundo, (2020), and Vasquez et al., (2019), on the requirement for businesses to become more responsible in their activities towards their

environment and society. Six main SBM concepts are identified and described below. Notable concepts include the Triple Bottom Line (TBL) framework, Circular Economy (CE) Model, Stakeholder Theory, Business Model Innovation for Sustainability (BMI), Resource-Based View (RBV), and Sustainability, and Cradle-to-Cradle Design.

The Triple Bottom-Line (TBL) Framework posited by Elkington (1994) the triple bottom line (TBL) consists of three Ps: profit, people, and planet. It is a foundational theory for sustainable business models introduced by Elkington (1997). It suggests that businesses should measure success based on three pillars: people (social equity), planet (environmental responsibility), and profit (economic viability). Only a company that produces a TBL takes account of the full cost involved in doing business (Elkington, 1997). The three pillars, as explained by Mio, Panfilo, & Blundo, 2020: People focus is on social outcomes, such as fair labor practices, community development, and human rights, Planet aspect emphasizes the reduction of environmental footprints, such as energy use, waste management, and sustainable sourcing, and Profit relates to ensuring financial success through innovation, operational efficiency, and long-term growth. Sustainability has become an attractive method for businesses to view their responsibilities through the TBL, a perspective based on three important dimensions: environmental quality, social equity, and economic prosperity (Elkington, 1998; as cited in Chabowski, Mena, & Gonzalez-Padron, 2011). *All authors on the TBL agree with Elkington (1994) on this concept as the compelling approach for businesses to become holistically responsible to the environment, society, and the business itself. This framework advocates for an integrated approach, it encourages organizations to balance financial performance with social and environmental impacts. It aims to measure the financial, social, and environmental performance of the corporation over time.*

The circular economy (CE) model. The circular economy is a system where materials never become wasted and nature is regenerated (Ellen MacArthur Foundation, 2013). CE is a model of production that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible (European Parliament, 2023). According to the Ellen MacArthur Foundation (2013), CE seeks to decouple economic growth from resource consumption. Voulvoulis (2022) Producing and consuming as cheaply as possible has created a pervasive linear economy in which objects are briefly used and then discarded as waste, is myopically focused (Voulvoulis, 2022). According to Bassi et al., (2020), the CE was defined by UNEP as “an economy that reduces the consumption of resources and the generation of waste, and reuses and recycles waste throughout the production, distribution and consumption processes” (UNEP, 2011, as cited in Bassi, Bianchi, Guzzetti, Pallaske, & Tapia, 2020). All authors on CE, EU Parliament, (2023), Voulvoulis,

(2022), UNEP, (2011), and Bassi et al. (2020), agree with Ellen MacArthur foundation, (2013) on the need for businesses to shift from the linear economy to a more sustainable business practices in a CE to redesign production and consumption, reduce waste, reuse, repair, recycle and refurbish existing resources for sustainability. *Different authors' views can be summarized to mean that CE is a business model that reduces waste and creates closed-loop systems where products are designed for reuse, refurbishment, or recycling. This model promotes innovation in product design, business processes, and encourages businesses to retain value in the system longer. CE model proposes a change in basic assumptions from traditional or linear models of "take-make-dispose" to a more sustainable system that emphasizes recycling, reuse, and regeneration of resources.*

Stakeholder theory by Freeman 2010 described businesses as having obligations to both shareholders and all stakeholders, including employees, customers, suppliers, communities, and the environment. Stakeholder theory enables companies to transparently communicate how they manage their social and environmental impacts, build trust and relationships with their stakeholders (Freeman et al., 2018). This model prioritizes long-term stakeholder relationships and integrates all stakeholders' interests into decision-making processes. Businesses address broader societal challenges by engaging stakeholders, which enhances their sustainability. Freeman, Pierce, & Dodd (2000) argue that businesses can and must reconcile profitability with environmental sustainability. Transparent reporting helps companies communicate their dedication to sustainability, building trust and stronger relationships with various stakeholders (Freeman, Harrison, & Zyglidopoulos, 2018). Summarizing all authors views, they identified that traditional business logic, which often prioritizes short-term financial gains, is unsustainable in a world facing environmental crises. All authors advocate for a novel approach where businesses integrate environmental stewardship into their core strategies. Freeman et al. (2018) further explained that transparency in the report of businesses helps them to become sustainable and build trust and stronger relationships with stakeholders.

Business Model Innovation (BMI). BMI describes "designed, novel, nontrivial changes to the key elements of a firm's business model and/or the architecture linking these elements" (Foss & Saebi, 2017, p. 201, as cited in Spieth, Breitenmoser, & Röth, 2023). It is an important driver of competitive advantage in dynamic markets (Foss, & Saebi, 2015). Bocken et al. (2014) propose that businesses can innovate by redesigning their value propositions, supply chains, and customer relationships to incorporate sustainability as a competitive advantage. Implementing a BMI perspective helps to keep the big picture in mind instead of focusing only on specific innovation topics described by traditional innovation management (Spieth, Breitenmoser, & Röth, 2023). BMI includes the exploration of new ways to create and capture value for a firm's stakeholders (Casadesus-Masanell & Zhu, 2013). The

changes in the approach of how firms go to market (Teece, 2010), and the discovery of a completely new BM within an existing business context (Markides, 2005). *All authors submissions on BMI show that, when businesses are intentional about novelty, nontrivial changes to key elements of their business model to create value for their stakeholders, it makes them sustainable and opens opportunities. Summarizing various authors' views, BMI can help companies create disruptive innovations that will both reduce environmental impact and create new market opportunities.*

Resource-Based View (RBV) and the sustainability of the firm were developed by Barney (1991) in his seminal article, which explains how a company can achieve and sustain competitive advantage. The RBV theory (Barney, 1991) suggests that businesses can achieve a competitive advantage by leveraging valuable, rare, inimitable, and non-substitutable resources. A population inclined towards environmental sustainability responds to market requirements with innovative solutions, minimizing environmental costs in the process Hart, & Dowell, (2011). The RBV encourages firms to identify, develop, and protect unique resources (tangible and intangible) that meet VRIO (Valuable, Rare, inimitably organized, and organizationally supported) criteria, such as proprietary technology, brand reputation, or skilled human capital (Barney, 1991).

A strong commitment to environmental sustainability encourages organizations to innovate and adopt practices that reduce their ecological footprint, responding to the increasing market demand for sustainable solutions (Bansal & Roth, 2000; Hart & Dowell, 2011; Kiron, Kruschwitz, Reeves, & Goh, 2013). Resources confer sustained advantage only if they remain valuable and cannot be easily substituted or imitated over time (Barney 1991). *Hart, & Dowell, (2011), Kiron et al., (2013), and Bansal & Roth, (2000) are of the view that strong commitment to environmental sustainability drives firms to innovate to respond to market demand and marketing solutions, while Barney (1991) provides the framework for innovative business practices. In a nutshell, VRIO framework and the driving force of sustainability make firms find new ways of doing business without leaving externalities for current and future generations to bear, making them to be innovative in their operations.*

The Cradle-to-Cradle (C2C) design concept, introduced by McDonough & Braungart (2002), advocates for the creation of products and systems that are inherently sustainable. The main objective of cradle-to-cradle production is to create products that can be used and reused throughout their entire lives in ways that add value (Wilber, 2010). Awareness is most important surrounding the issues of sustainability (Wilber, 2010). The Cradle-to-Cradle Certified Product Program considers the company's policies and practices along the entire value chain, integrating a comprehensive approach to address all impacts on people and the planet Eco Intelligent Growth. (n.d.). C2C requires a shift from sustainability as damage control to sustainability as a creative, regenerative process that fosters abundance and diversity.

McDonough & Braungart (2002). Authors went further to argue for eco-effectiveness, which seeks to design systems that have a positive impact by generating biological and technical nutrients. “Policy interventions like extended producer responsibility (EPR) schemes can incentivize manufacturers to adopt C2C design principles” (Kerdlap, Low, & Ramakrishna, 2020, p. 522). “Material passports” to track building components for reuse, reducing demolition waste through C2C-inspired design (Honic, Kovacic, & Rechberger, 2022). C2C principles align with circular economy goals, as emphasis on material health certification and closed-loop systems in manufacturing are key for implementation (Peralta, González, Lama, & Ávila-Gutiérrez, 2015). Everything is a resource for something else (McDonough & Braungart, 2002). Paradigm shifts from sustainability as damage control to sustainability as a creative, regenerative process that fosters abundance, and diversity is a requirement (McDonough & Braungart, 2002).

Doughnut Economics. It is a visual framework for sustainable development that is shaped like a doughnut or lifebuoy by English economist Kate Raworth. It challenges traditional economic models that prioritize GDP growth above all other goals, at the expense of the environment and social well-being. It provides a more comprehensive view of economic success, with emphasis on a thriving economy as one that operates within the Earth’s ecological limits while ensuring that no one falls short on life’s essentials. By adopting this framework, societies can aim for sustainability and justice, it reconciles human needs with the planet’s health (Ross, 2020). This model is particularly relevant in the context of climate change, resource depletion, and rising inequality, it offers a roadmap for achieving sustainable development in the 21st century (Quickonomics, 2024). *This model is comprehensive in nature, and it aligns with other concepts. It goes ahead to provide a visual framework for implementation. All authors on C2C are optimistic about policy framework, redesigning of processes to ensure sustainability is strategically placed. They all agree on sustainability as a change in basic assumptions to circularity instead of remaining linear in business operations.*

All sustainability concepts identified in this subchapter have their theories around a change in thinking from economic success of businesses to an integrated approach of business models to include environmental sustainability and social sustainability as a core value to regenerate, reuse, recycle, and remanufacture resources to enhance eco-effectiveness. Table 2 below describes the features of various SBM concepts discussed above.

Table 2

Sustainable Business Model concepts and their features

SBM concept	Specific features /or core principles	Strengths and limitations
Triple Bottom-line Framework	People, Planet, and Profit	Strength: Holistic perspective on economic, environmental, and social dimensions. Foundational theory for other SBMs. Widely recognized framework. Flexible and encourages accountability. Weaknesses: Often used as a marketing tool (greenwashing). Lacks clear metrics for implementation.
Circular Economy model	Closed-Loop systems, Product as a service design, Regenerative Design, Value retention and efficiency, eliminates the concept of waste. Innovation-driven and system-level transformation.	Strengths: Strong environmental impact and drives innovation in design. Materials and coordination-oriented. This can lead to cost savings and a new revenue stream. Weaknesses: No mention of the social dimension of sustainability. High initial cost of implementation. Requires cultural and system change. Some industries may not be able to adopt CE.
Stakeholder theory	Multi-Stakeholder Orientation. Ethical foundation, Rational view of the firm. Long-term value creation. Strategic decision making. Influential in corporate governance and CSR	Strengths: Ethical and inclusivity enhances reputation, trust, and stakeholder loyalty. Encourages sustainable, long-term thinking. Weaknesses: It is difficult to balance competing interests. It lacks operational guidance. May lead to decision complexity or bureaucracy.
Business Model Innovation (BMI)	Redesign of value logic. Dynamic capability. Innovation beyond products, Enabler of Sustainability Transitions. Customer-centric and ecosystem-oriented	Strengths: Encourage systemic change and innovation. It can open new markets and revenue streams. It enhances long-term resilience and competitiveness. Weaknesses: It can be resource-intensive and risky to implement. Requires major organizational change. Success depends on external factors like market readiness and a supportive regulatory environment.
Resource-Based View (RBV) and Sustainability	Firm-centric. VRIO (Valuable, Rare, Inimitable, Organized, and organizationally supported) framework drives long-term success. Strategic use of sustainability. Emphasizes developing unique routines. Expertise and culture over time. Helps frame why and how sustainable practices	Strengths: It links sustainability to the core strategy. Encourages investment in long-term capabilities. Weaknesses: Since it is firm-oriented, less focus on systemic or societal impacts. Will only promote sustainability if it is strategically beneficial. It can overlook externalities or ethical dimensions of resource use.
Cradle to Cradle (C2C) Design	Continuous reuse either as biological nutrients or technical input. Design for disassembly. Eliminates the concept of waste. Material health and safety. Energy and water stewardship. Certification system.	Strengths: Provides a practical design framework. Innovation and long-term thinking. Can be aligned with both environmental and economic goals. Weakness: High design complexity. limited to a product-heavy industry.
Doughnut Economics	Social foundation. Sustainable lifestyle. Environmental ceiling. Overconsumption is environmentally unstable. Poverty and needs are socially unstable.	Strength: Holistic framework. Challenges growth obsession. Visually clear. Practical guide for all stakeholders. Encourages system thinking. Support for local adaptation. Weaknesses: Lacks precise metrics. Aspirational model. New concept compared to old ones.

Source: created by the author based on various authors' concepts of SBM in the literature review.

Summarizing various SBMs, the triple bottom-line (People, planet, profit) is the underlying factor for all SBMs. SBM can be described as how an organization creates, delivers, and captures value, in economic, social, environmental, or other contexts, in a sustainable way. SBM construction forms an innovative part of a business strategy, far from the traditional business model. It creates opportunities for businesses to use innovative approaches to address global issues while remaining resilient and creating value for all stakeholders.

1.2. Strategic approaches to sustainability in international companies

International companies, also referred to as multinational corporations (MNCs) in some instances, are businesses that operate across national borders, engaging in trade, investment, or production activities in multiple countries. They leverage resources, access new markets, and utilize comparative advantages offered by different regions. Alternatively, international companies are firms that manage business operations in more than one country. These companies often adapt their strategies to local markets while maintaining a global presence (Hill, Hult, & McKaig, 2014). These companies typically seek to maximize profits by leveraging global opportunities and resources while adapting to the legal, cultural, and economic conditions of foreign markets (Daniels, Radebaugh, & Sullivan, 2018). International companies play a pivotal role in the implementation of SBMs.

International companies, for that matter (MNCs), are major implementation institutions for global sustainability efforts due to their use of various resources, global reach, and influence on supply chains and markets. They act as agents of change and migrate the best sustainable practices across borders, particularly to regions with weaker environmental regulations (Hart, 1995). MNCs' activities are super important to sustainability, considering the fact that they must adopt green technologies, responsible supply chain practices, and set industry benchmarks for environmental and social governance (Elkington, 1997). MNCs become sustainable when they develop and implement sustainable business strategies that balance growth and profit with environmental and social responsibility (Zopounidis & Lemonakis, 2024). Integrating sustainability into the business plan as part of the foundational framework creates value for all stakeholders, which in turn drives performance (Grigoroudis et al., 2012, as cited in Zopounidis & Lemonakis, 2024). Companies must fundamentally shift their operational logic to incorporate sustainability principles (Abdelkafi & Täuscher, 2015, as cited in Zopounidis & Lemonakis, 2024). Pursuing both profit and sustainability objectives is increasingly important for contemporary organizations (Alberti & Garrido, 2017, as cited in Zopounidis & Lemonakis, 2024). *All recent authors in various articles confirm the assertion made by Elkington (1997) and Hart (1995), that MNCs' role in the implementation of SBMs is key to the success of meeting the needs of the current generation without*

compromising the need for future generations to meet their own needs. This is a call to action for MNCs to prioritize sustainability in their business operations and practices. They must walk the talk by placing SBM at the heart of their strategies and ensuring they are sustainable and creating value for their stakeholders.

International companies have always been there as institutions implementing multiple progressive agendas in many countries and the world over because they are at the center of economic activities. They engage in production and consumption, and they ensure that their products or services reach the final consumer by completing the cycle. They have been criticized for their carbon footprint over time, which has resulted in a state of emergency called greenhouse gas emissions and climate inconsistencies experienced by the whole world. The onus lies on them now to redeem their image and ensure they are operating sustainably by implementing SBMs. They approach sustainability in many ways:

- **Integrating sustainability into their core business strategy.** Businesses, over the years have made a conscious effort to create shared value. They see themselves as corporate citizens who are also stewards of their environments. They shifted from the linear business model, which used to be solely profit-oriented, to integrating shared value creation into their core business strategy. The triple bottom line guides their operations, and by this, they align profit with societal needs to address social and environmental challenges (Porter & Kramer, 2011). They also align their corporate strategy with the SDGs to drive global equity and ecological balance (George, Howard-Grenville, Joshi, & Tihanyi, 2016). *Both authors emphasized the social and environmental dimensions of their core business strategy as a requirement for global equity and ecological balance.*
- **Circular Economy Transition.** International companies see the need to redesign their processes and operations to align with CE principles. Closed-loop systems redesign products, processes, and services to eliminate waste through reuse, repair, and recycling (EMF, 2015), and industrial symbiosis by collaborating with other businesses to exchange waste as resources (Chertow, 2007). It involves sharing their by-product or services that would otherwise have been disposed of or underused with other companies as input to minimize waste and maximize the utility of resources. *Both authors on transitioning to CE recommend that all businesses operate a closed-loop system to eliminate waste, create, and retain value longer for all stakeholders.*
- **Environmental, Social, and Governance (ESG) integration.** Recent techniques by which businesses ensure that sustainability is not just a buzzword is by ensuring ESG reporting and

stakeholder capitalism. ESG reporting measures and discloses the sustainability performance of companies using Global Reporting Initiative (GRI) or Sustainability Accounting Standards Board (SASB) frameworks (Eccles, Ioannou, & Serafeim, 2020), and Stakeholder capitalism prioritizes long-term value for stakeholders over short-term profits (Freeman et al., 2020). *ESG has become a necessary tool to track how businesses behave responsibly in their operations to ensure that their actions create value for all stakeholders.*

- **Climate action and decarbonization.** Companies set Science-Based Targets (SBTs) to align emission reductions with Intergovernmental Panel for Climate Change (IPCC) pathways to limit global warming to 1.5°C. Companies with SBTs have delivered emissions reductions at scale (SBTi, 2020), and achieved carbon neutrality by investing in renewable energy, carbon offsets, and energy efficiency (CDP, 2021). Climate action and decarbonization are world emergencies that call for pragmatic action.
- **Sustainable supply chain management.** Ethical sourcing and blockchain traceability are required to achieve a successful SBM implementation since businesses must achieve environmental and social equity. Partner with suppliers to ensure fair labour practices and reduce environmental footprints is in the right direction (Gualandris, Klassen, & Vachon, 2021), and using digital tools to track material origins and ensure transparency gives evidence of business activities (Kouhizadeh, Saberi, & Sarkis, 2021). Agility, fairness, and environmental sustainability are easy to achieve when businesses manage their supply chain effectively.
- **Regenerative business model.** Businesses oppose environmental degradation and destruction of ecosystems by engaging in restorative practices and biodiversity protection. Modern businesses strive to restore natural systems through regenerative agriculture and reforestation (Raworth, 2017), and conscious efforts are made to ensure their operations align with planetary boundaries to prevent ecosystem collapse (IPBES, 2019).
- **Digital innovation.** AI-driven efficiency and IoT for circularity are used to attain sustainability. Availability of AI tools makes it easier for international companies to operate efficiently by optimizing the use of resources through predictive maintenance (Bressanelli, Adrodegari, Pigosso, & Parida, 2022). IoT for circularity allows ICs to deploy sensors to monitor product lifecycles and enable them to reverse logistics where it matters (Winkelhaus & Grosse, 2020).
- **Stakeholder collaboration.** Cross-sectional collaboration and community engagement enhance inclusivity. All stakeholders matter to ensure there is harmony with governments, Non-governmental organizations (NGOs), and academia to scale solutions (Kania, Kramer, & Senge,

2021). Businesses are stewards of their environments. As they live and operate in communities, they are expected to engage with the community through partnership initiatives with them to address social inequalities and environmental challenges (UN Global Compact, 2021).

Summarizing various authors' opinions on strategic approaches to SBM implementation, it is identified in this subchapter that international companies adopt multiple strategies to implement sustainable business models, by focusing on long-term viability, incorporating triple value creation, engaging all stakeholders, integrating value proposition, managing their supply chain sustainably, digitally innovating, and managing their environmental impact, among others.

1.3. Factors that drive international companies to implement sustainable business models

The globalization of trade and business has highlighted the importance of sustainable practices across borders. As companies expand into international markets, they are confronted with various challenges that require integrating sustainability into their global strategies. The implementation of SBMs is driven by multiple factors, including Innovation, regulatory pressures, market demands, stakeholder expectations, and competitive advantages. Governments and international organizations enforce policies and agreements, such as the Paris Accord, to encourage businesses to adopt sustainable business practices (United Nations, 2015). Consumer demand for eco-friendly products has also increased, prompting companies to integrate sustainability into their strategies (Porter & Kramer, 2011). International companies experience some push and pull factors that drive them to implement SBMs. Push or pressure factors are external motivators, and pull factors are incentives, opportunities, and internal motivators such as MNC's own dynamic capabilities. The main push factors are:

- **Digitization of global flow pressure.** One major push factor is the current trend of global flow in Innovation and digitization, which is central to sustainability, for that matter, SBMs. The new trend of globalization is digital flow in nature, which brings about a new irreversible phenomenon. Data-driven insights are critical to align SBMs with real-time market and ecological demands (Bocken & Geradts, 2020). Technologies like blockchain and IoT are necessary for “closing the loop” in circular economies, as their application is useful in waste minimization and resource reuse maximization. (Lüdeke-Freund et al., 2023). When MNCs apply digital tools, they promote resource efficiency, transparency, and scalability. Technology addresses key challenges in transitioning from linear to circular and regenerative systems. International companies have no choice but to digitize or die without digitization.

- **Global sustainability challenges.** International business expansion often requires MNCs to adapt to environmental and social challenges, such as climate change, resource depletion, and labor rights concerns. MNCs that incorporate sustainability into their models are better positioned to respond to these challenges. For example, MNCs in industries such as energy, manufacturing, and agriculture must transition towards low-carbon solutions and environmentally friendly processes to meet global expectations and adhere to international regulations (Holliday, Schmidheiny, & Watts, 2002). A notable example is the shift of global automotive companies, such as Ford and Toyota, towards electric vehicles (EVs) as part of their sustainable business strategies in response to both environmental concerns and global regulatory pressures (Hawkins, & Milne, 2006). Adhering to global sustainability standards in response to global challenges will in the long run project a positive image for implementing MNC's and translate to additional revenue streams in the long run.
- **Regulatory pressure and compliance.** Governments around the world are enacting stricter environmental regulations, including laws to curb carbon emissions, manage waste, and protect ecosystems (Murray, & Dey, 2019). Companies operating in multiple countries need to develop flexible and adaptable SBMs that can accommodate local environmental regulations, cultural differences, and community needs while aligning with their global sustainability objectives (Dunning, 1988). Mandatory ESG disclosures, such as the EU's Corporate Sustainability Reporting Directive (CSRD) and the SEC's proposed climate disclosure rules in the U.S., compel companies to report environmental impacts (European Commission, n.d.). Implementation of SBMs enables businesses to stay ahead of regulatory changes, comply with new laws and directives, and minimize the financial and operational risks associated with non-compliance. For instance, the Paris Agreement calls for global commitments to limit global warming, compelling various countries and regions to implement policies such as carbon taxes and sustainability reporting requirements. Government policies, environmental regulations, and international agreements make it mandatory for businesses to be sustainable. Noncompliance attracts fines in some countries.
- **Brand image and reputation.** International companies will prefer to behave responsibly in the eyes of the people. Negative public perception or media scrutiny over environmental harm or unethical practices will not project the company as successful in its operations. MNCs with strong Environmental, Social, and Governance (ESG) practices exhibit higher brand trust in emerging markets (Fombrun, Gardberg, & Sever, 2021). Companies with inconsistent sustainability claims

suffer more negative media coverage (Lyon, & Montgomery, 2023), act as a buffer against reputational risks (Hawn & Ioannou, 2022). Submissions from authors on brand image and reputation signify that the perception of others about the organization must be managed well to remain a player in the international companies' space. This is achievable through the implementation of SBM.

- **Global supply chain efficiency requirements.** Global supply chains are complex and mostly unsustainable, with issues ranging from poor labor practices to resource inefficiencies and environmental degradation. SBMs encourage companies to rethink how they source materials, manufacture products, and engage with suppliers (Bocken et al., 2014). SBMs provide insights into how businesses can build more sustainable and ethical supply chains, to cause a global shift towards sustainability. When businesses improve supply chain efficiency, it helps them reduce operational costs, improve their brand image, and gain access to new markets.
- **Market pressure.** Globalization and interconnectivity inform consumer behavior by increasingly demanding sustainable products and services. Consumers are becoming more sophisticated and are aware of the social and environmental impact of their purchasing decisions, driven by factors such as growing environmental awareness and concerns about corporate social responsibility (Lee, & Kotler, 2011). International companies are compelled to adapt and implement sustainable practices or risk losing market share, customer loyalty, and brand reputation. This shift has created a need for research that explores how businesses can develop and implement SBMs that meet evolving consumer demands while remaining competitive in the marketplace. Consumer Expectations inform business direction and operations. All stakeholders and investors demand accountability from businesses for their actions.
- **Resource scarcity.** Limited availability of natural resources compels international companies to source alternatives that will help their business continuity. Lithium and cobalt shortages accelerate battery recycling and alternative storage technologies (Ali, et al., 2022). Scarcity-driven regulations redirect international companies to the implementation of circular models (Delmas, & Montes-Sancho, 2021). Interventions must address both supply-side scarcity and demand-side behavioral lock-ins (Perros et al., 2022, p. 890). Limited resources promote closed-loop systems and material efficiency (Bocken et al., 2016). All authors on resource scarcity agree with Bocken et al., 2016 that scarcity is enhancing creative capabilities of international companies, leading to the implementation of SBM.

Pull factors are positive motivators that drive companies to implement SBMs due to their potential benefits:

- **Cost savings motives.** MNCs implementation of SBMs lead to Waste reduction, energy efficiency, and lean supply chains that help lower operational costs. In the long run, they can hedge against resource scarcity and regulatory fines. Sustainability performance leads to “lean and green” supply chains which yield productivity gains through cost reductions (Joe, Richter, Larson, Redder, Vigerstol, & Bowen, 2013). Investments in water efficiency can significantly reduce the operational costs and enhance the available quantity of reusable water (Rozza et al., 2013, as cited by Joe et al., 2013). Proactive adoption of SBMs avoids fines for violation of environmental regulations (Eccles, & Serafeim, 2020).
- **Innovation and competitive advantage.** MNCs become proactive in changing to current trends when they adopt innovative solutions in time for their own good while addressing global challenges. Innovation is key to sustainability as companies that find new and better ways of running their business help them to scale through cultural nuance, consequences of climate change, and other barriers that may cost the business a great deal of resources. Sustainable business models might have the additional benefit of higher risk mitigation and resilience (Chio Wang, 2009, as cited in Geissdoerfer, Vladimirova, & Evans, 2018), and SBM innovation is regarded as a strategic asset for competitive advantage and firm performance (Afuah, 2004; Chesbrough, 2007; Hamel, 2000; Magretta, 2002, as cited in Geissdoerfer, Vladimirova, & Evans, 2018). *Various authors’ opinions indicate that Innovation and the motive to gain a competitive advantage drive companies to implement SBMs.*
- **Access to funding.** International companies implement SBM as a bait to attract incentives from Non-Governmental Organizations (NGOs) and Government institutions. ESG funding Over \$30 trillion in global assets under management prioritizes sustainability (Eccles & Klimenko, 2020). EU’s Horizon 2020 program allocated €80 billion for clean tech R&D (European Commission, 2023). *Government incentives in the form of subsidies encourage private-sector participation and implementing SBM is one way by which companies get to qualify for these incentives.*
- **Employee attraction and retention.** International companies attract and retain employees when they are committed to sustainability. Workers, especially younger generations (Millennials and Gen Z), prioritize employers that align with their values, including environmental and social responsibility. Employees seek roles that contribute to societal good. Companies with SBMs report 30% higher applicant interest (B Lab, 2022). 64% of Millennials and Gen Z employees

prioritize working for companies with strong environmental and social commitments (Deloitte, 2023). Sustainability initiatives enhance pride and loyalty among company employees. Businesses with robust ESG practices see 25% lower turnover (Gallup, 2023). *Results from various surveys emphasize that companies that prioritize SBM implementation become the choice of work environment for younger generations who are purpose driven in their choices and action.*

- **Long-term risk management.** Long-term risk management involves anticipating and mitigating future threats to organizational stability, such as climate change, resource scarcity, regulatory shifts, and social inequality. SBMs are necessary to implement as they help anticipate and address these risks, ensuring resilience and continuity. Long-term risks include climate volatility and regulatory shifts (Bocken & Geradts, 2019; Delmas & Montes-Sancho, 2021). Sustainable practices enhance long-term profitability (Bocken, 2016). Resource scarcity drives circular innovation (Lieder & Rashid, 2016). "Circular models decouple growth from resource depletion" (Bocken et al., 2016, p. 310).

Summarizing various authors' opinions, international companies implement SBMs to manage long-term risk and to remain resilient in their operations. It is also necessary for companies to remain in business and provide value for money to their clients. They also meet the needs of the changing global economy by being sustainability-focused. Table 3 summarizes various drivers of the implementation of SBM.

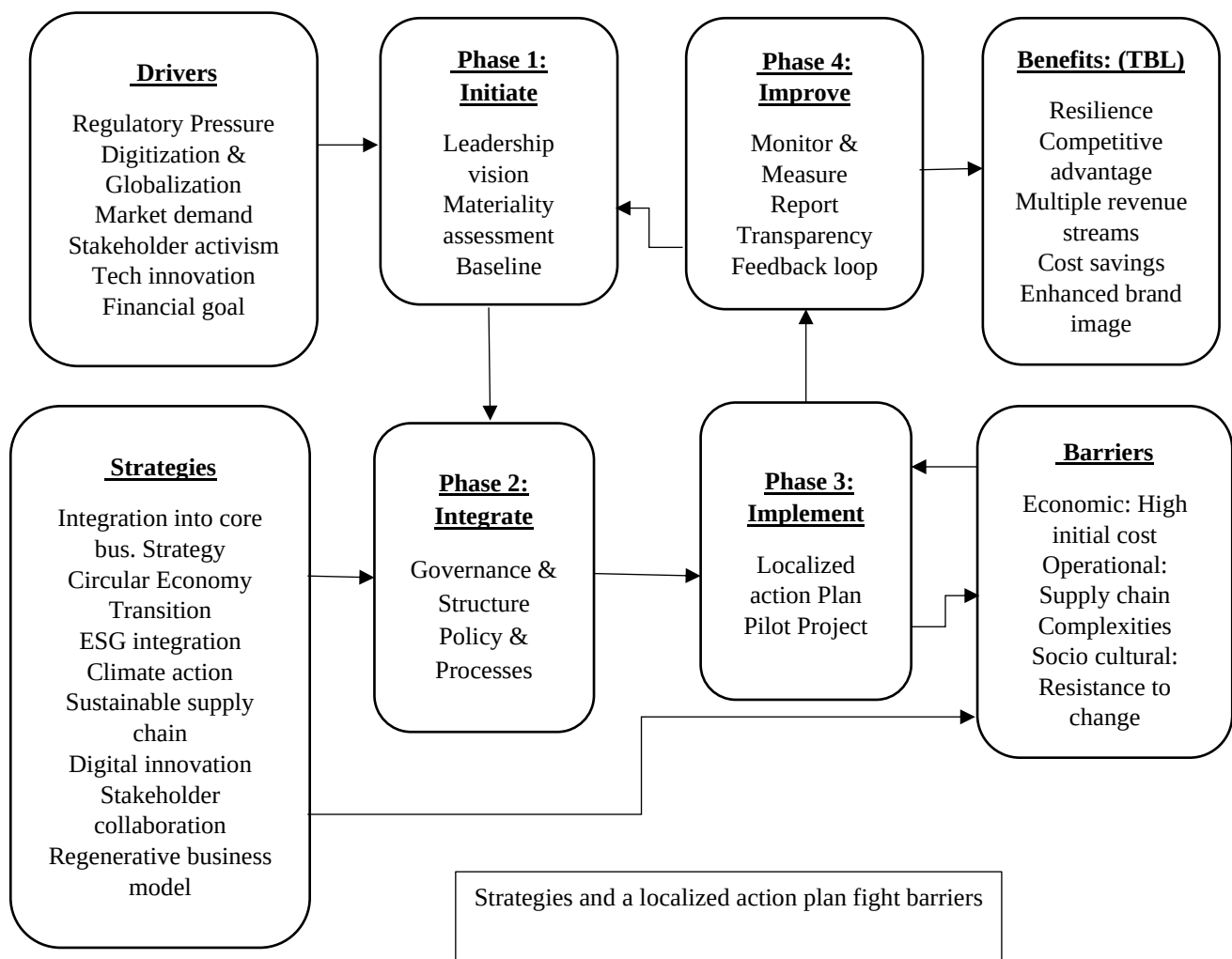
Table 3

Drivers for international companies to implement sustainable business models

Category	Push factors/ Pressure/ Challenges	Pull factors/Opportunities/Incentives or Dynamic capabilities
Digitization and global flow	A new wave of globalization is shifting to a digital flow. Availability of information and technological tools.	The new trend of employee choices for the ideal place of work compels companies to position themselves to attract and retain purpose-driven younger talent.
Regulatory	Environmental regulations and compliance-related requirements. High ESG security.	Government and non-government incentives and subsidies for green initiatives.
Market	Declining demand for unsustainable products.	Growing demand for ethical and eco-friendly products.
Reputational	Negative publicity and brand image damage for unethical practices.	Enhanced brand image and competitive differentiation.
Financial	Rising cost and scarcity of non-renewable resources.	Cost savings and a new revenue stream for energy efficiency and waste reduction.
Social	Stakeholder activism and societal expectations.	Strong community relationships, networking, and employee engagement.
Technological	Outdated resources and pressure to adopt new, trendy resources.	Opportunity to adopt an agile workforce and environment, and green technology.
Global Action	Call to action on climate change and resource scarcity threats.	Aligning organizational strategies with SDGs and global sustainability movements.

Source: created by the author based on the literature review on drivers of SBM implementation literature reviewed.

Based on the theoretical concepts and models identified, it can be stated that the implementation of SBM is key to addressing various global challenges, such as climate change, resource scarcity, and environmental degradation, and responding to various SDGs. It is also noteworthy that the implementation of SBMs leads international companies to discover opportunities in their operations and various markets. In implementing SBMs, companies experience push and pull factors that compel them to own the challenge. Below is a model for the implementation of SBMs in international companies based on various concepts identified and factors discussed in this theoretical chapter. Figure 1 below shows the implementation roadmap of SBMs.



Source: created by the author in accordance with the theoretical literature.

Figure 1. Theoretical model of implementation of SBM in international companies (4i's model)

This theoretical model shows (Figure 1) that implementation of SBM requires various stages of strategic action to achieve the desired result. The international company as an institution must be aware of SBM and commit to it. In so doing, they require input of materiality assessment and leadership acceptance to implement SBM. This will result in a sustainability vision aligned with UN SDGs/EU Green Deal. This gets connected to stage 2 of the roadmap, which is strategic alignment. At this level, the TBL metrics will be initiated by setting Science-Based Target initiatives (SBTi) goals. This goal is aimed at reducing emissions to mitigate greenhouse gas emissions (GHG) with the latest climate science. This strategic alignment results in an integrated sustainability strategy. We then connect strategy alignment to the next stage, which is design and innovation. At this level, CE design principles are used by performing Life cycle assessment (LCA), which reveals the impact of a product, process, or service throughout its entire lifecycle. It is data-driven, and a prototype is obtained; thus, the Product Service Systems (PSS) model is adopted and then connected to the next stage, called the stakeholder engagement stage, where stakeholder theory is applied. Stakeholder mapping and co-creation workshops are the main activities at this level, where partnerships like non-governmental organizations (NGO), government, communities, employees, and suppliers, but not limited to only these, depending on who needs to be part, are engaged at various roles or levels and connected to the pilot testing stage. Stage five uses the lean start-up methodology named minimum viable product (MVP) development as it is on a pilot basis. This process will result in validated pilots with key performance indicators (KPIs) for example, stakeholder feedback that connects to the next stage, named scaling and integration. The theoretical foundation at stage six is RBV. Resources such as finances, humans, and technology are allocated at this stage and full-scale SBM is rolled out in the form of an ethical supply chain and connected to the next stage called the monitoring and adaptation stage. At this level, Doughnut Economics theory is applied by monitoring the ESG dashboard, adapting AI analytics, which will result in annual sustainability reports and adaptive strategies. The loop is closed by connecting back to awareness and commitment through constant feedback. The Sustainability Report will determine the next level of awareness and commitment required.

Summarizing the theoretical chapter, it is necessary for every international company to adopt and implement sustainable business models as they provide guidance on how resources, business activities, processes, and services are judiciously used through innovation and application of modern tools to connect to nature. It is the process by which businesses integrate stakeholders into their activities to achieve the best results. It is the only way by which international companies can address global challenges while remaining resilient. By implementing SBMs, businesses will achieve SDGs as expected, and this achievement will help preserve resources and prolong their availability for current and future

generations. They can also regenerate and recycle resources to avoid supply chain disruptions for their own good.

2. EMPIRICAL RESEARCH LEVEL ON THE IMPLEMENTATION OF SUSTAINABLE BUSINESS MODELS IN INTERNATIONAL COMPANIES

This part provides research carried out by different authors about the implementation of sustainable business models (SBMs) in international companies. It gives a systematic review, synthesizing empirical research on sustainable business model implementation, it examines various organizational contexts, including manufacturing, agribusiness, energy, construction, and logistics sectors to span across multiple sectors for scalability analysis of key drivers and barriers are made in subsection 2.1 and subsection 2.2, summarizes all the literature reviewed, and a research model is developed, which becomes the basis of the next chapter for the conduct of my research in the third part of this master's thesis.

2.1. Summary of research on the implementation of sustainable business models in international companies

Research on sustainable business models (SBMs) in international companies has progressively moved away from conceptual definitions to an expanding empirical literature that examines how businesses, including international companies, for that matter, multinational companies (MNCs) develop, adapt, and implement business models that integrate environmental and social value with economic value creation (Stubbs & Cocklin, 2008; Bocken et al., 2014). This study synthesizes studies from Europe, Brazil, Asia, and some emerging economies. Implementation outcomes demonstrated substantial quantitative impacts, including CO₂ reductions ranging from 37.4% to 55%, productivity improvements of 8%, and projected economic benefits of €1.8 trillion for Europe with 700,000 jobs by 2030 (Ellen MacArthur Foundation, 2021; European Commission, 2020). Review of scientific sources and their syntheses show three patterns in the empirical work, namely: Typologies and archetypes, process and capabilities focus, context sensitivity, and multi-level constraints.

Typologies and archetypes: Bocken et al. (2014) mentioned in their literature and practice review to develop sustainable business model archetypes that studies provide models, such as circular economy loops, product-as-service, and maximizing resource efficiency, that businesses and institutions can adopt or combine when designing SBMs. A framework that integrates existing sustainable design theory with important business concepts, clustering it into four literature streams: Ecodesign, product service system design, and sustainable business models that businesses can adopt or combine when designing SBMs. A framework that integrates existing sustainable design theory with important business concepts, clustering it into four literature streams: eco-design, product service system design, sustainable

business model design, and collaborative ecosystem design (Baldassarre, Keskin, Diehl, Bocken, & Calabretta, 2020).

Process and capabilities focus: An important level of empirical research dwells more on dynamic capabilities, organizational design, and managerial processes that enable SBM innovation and adoption in large businesses (Teece, Pisano & Shuen, 1997; Bocken & Geradts, 2020; Geissdoerfer, Vladimirova, & Evans, 2018). Key implementation strategies included boundary spanning and experimentation. In particular, boundary spanning, experimentation, practical tools, and guidelines for BM design and corporate management methods can facilitate business model innovation (BMI) and the success of SBMs (Boons & Lüdeke-Freund, 2013; Brehmer et al., 2018; Matos & Silvestre, 2013; Sousa-Zomer & Cauchick-Miguel, 2018, as cited in Mignon & Bankel, 2022)

Context sensitivity and multi-level constraints: empirical evidence emphasizes that international companies' SBM implementation is shaped by institutional environments, supply-chain complexity, and multi-stakeholder pressures across markets. These factors make implementation differences across units and geographies (Schaltegger, Lüdeke-Freund & Hansen, 2016; Nosratabadi et al., 2020). In scientific literature, it is evident that SBMs are practicable and potentially profitable, but not all international companies have fully implemented them, because adoption requires changes in strategy, governance, metrics, and capabilities (Geissdoerfer et al., 2018; Bocken & Geradts, 2020). *In summary, all authors above have identified in their empirical evidence that the dynamics of business models have become more complex and require major changes both externally and internally to implement and achieve sustainable business models in international companies. The next sub-aspect of this sub-chapter discusses the drivers of implementation of a sustainable business model. Table 4 below summarizes various empirical studies by various authors on the implementation of SBM in international companies.*

Table 4

Summary of the empirical research level

Author	Research Design	Sample size	Geographic scope	Industry focus
Brian Baldassarre et al., 2020	Literature review and expert interviews	Twenty international experts	International	Not specified
Tomas Santa-Maria et al., 2021	combined literature and multiple case study approaches.	Ten incumbent firms	Not specified	Not specified
Mignon, & Bankel, (2022)	Systematic review of empirical cases	87 unique cases	Europe and Asia	Manufacturing, agriculture, fashion, food, energy, and construction

Table 4 (continued)

Author	Research Design	Sample size	Geographic scope	Industry focus
Latino et al., 2024	Grounded theory research with case study	107 European agribusiness companies	European	Agribusiness
Vladyslav Bato et al., 2024	case study	Two companies (Patagonia and Philips)	Global	Outdoor apparel, health technology and electronics
Mattos et al., 2018	Systematic literature review	52 references	Global	Energy
Spoz et al., 2021	Mixed methods (literature review and empirical study)	Not specified	Not specified	Not specified
Munaro et al., 2021	Systematic literature review	89 articles	Not specified	Construction
Gomes et al., 2022	Descriptive exploratory case study	Two Brazilian logistics companies	Brazil	Logistics

Source: created by the author based on empirical research level of various authors analyzed.

Table 4 summarizes the empirical research level identified from the literature used; the focus of this table shows the diversity of research designs, sample sizes, geographic scopes, and industry focuses across existing studies. The written works reviewed provide qualitative and exploratory research methodologies, with frequent use of literature reviews, systematic reviews, and case study approaches. Most of the authors used, including Brian Baldassarre et al. (2020) and Tomas Santa-Maria et al. (2021), combine literature reviews with expert interviews or multiple case studies, which show a focus on theory building and conceptual development rather than statistical generalization. Generally, literature reviews are also common, as shown by the studies of Mignon and Bankel (2022), Munaro et al. (2021), and Mattos et al. (2018), with sample sizes ranging from 52 to 89 articles or cases. This reflects a growing academic interest and consolidation of knowledge in the field of the implementation of sustainable business models in international companies.

The studies vary across geographic scope, across global, international, regional, and country-specific contexts. Some researchers adopt a global or international perspective, while others concentrate on Europe, Asia, Brazil, or emerging economies. The industry focus is similarly diverse; it covers sectors such as manufacturing, agriculture, agribusiness, energy, construction, logistics, fashion, and health technology, and all the cross-sector relevance of the research topic is made clear.

Latino et al. (2024) and Vladyslav Bato et al. (2024), in recent empirical contributions, identified case studies and well-known theory approaches with targeted samples; their studies provided context-specific insights. The table indicates that existing empirical research is qualitative in nature, sector-

diverse, and exploratory in nature. The reviewed studies suggest opportunities for future studies to incorporate quantitative or mixed-method approaches with larger and more representative samples.

As the summary of the research on the implementation of sustainable business models in international companies was sourced, it was identified that businesses implement sustainable business models when external factors or their own internal factors drive them to implement SBM. Thus, external and internal factors are the enablers that work together for a successful implementation.

Empirical research shows reviews as well as case studies, noting that many international companies adopt SBM intentions through their strategic commitments. The actual implementation is not the same across all international companies. The level of implementation depends on a combination of external pressures, internal capabilities, and sectoral constraints (Mignon & Bankel, 2022; Dentchev et al., 2018). Studies in some sectors show that implementation compels MNCs to redesign value propositions, adjust supply chains, and often establish new partnerships or platforms (Munaro et al., 2021; Gomes et al., 2022; Latino et al., 2024).

External drivers are factors outside the international company's own organization. These can be identified as regulatory and policy drivers: International companies that are proactive in implementing SBMs do so on purpose. Implementation is a strategic response to comply with existing regulations and anticipate future, and even stricter policies. An example is the case in major markets like the European Union. Complying with the EU Green Deal is necessary for businesses operating within their authority (Schaltegger, Hansen, & Lüdeke-Freund, 2016). Mattos and De Albuquerque (2018) and Ziolo et al. (2023) stated that strong regulations and incentives help SBM adoption. International companies face a complex network of environmental regulations, carbon pricing mechanisms, and sustainability reporting standards across different authorities, which makes it a mandatory aspect for business continuity.

Stakeholder influence: The expectations of various stakeholder groups enhance multinational companies' quest to implement SBMs. Every business has customers, investors, employees as well as the community in which they operate.

Customers are getting increasingly complicated in their demand for sustainable products and services. Consumer and B2B buyer preferences drive MNCs to implement circular and social innovations (Dentchev et al., 2018; Mignon & Bankel, 2022). Consumers in developed economies such as the EU prefer products and services from environmentally and socially responsible companies.

Investor pressure: The rise of environmental, social and governance (ESG) practices from shareholders brings about SBM adoption. Demand for sustainable products and services, investor ESG requirements and reputational concerns lead to SBM adoption. Consumer-facing MNCs and businesses

in high-visibility sectors are faced with such pressures (Geissdoerfer et al., 2018; Nosratabadi et al., 2020).

Cross-sector partnerships and ecosystems: SBM implementation becomes successful when MNCs have good partnerships with suppliers, recyclers, platform providers, and NGOs. (Latino et al., 2024; Gomes et al., 2022). Supply chain integration and partner networks are highly influential. Integration and cooperation with suppliers, customers, and third-party service providers, such as designed take-back, remanufacture, etc., enable circular and service models. (Bocken et al., 2014; Schaltegger et al., 2016).

Employee attraction and retention: Talented employees from younger generations are attracted to organizations that are sustainable (Lüdeke-Freund, Rauter, Pedersen, & Nielsen, 2020). Summarizing various authors' input, stakeholder influence, such as investor pressure, customer demand, NGOs, and employee attraction, constitutes a major driving force that pushes international companies to implement sustainable business models.

Technological innovation: The knowledge economy gives rise to the availability of information and digital technologies such as Internet of Things, Big Data, and AI that enable new SBM patterns. For instance, digital platforms can facilitate product-service systems and sharing models, while advanced data analytics can optimize resource flows and enhance supply chain transparency (Bocken & Geradts, 2020). Technological innovation makes it necessary for international companies to adopt SBM to stay in competition

Economic and market advantages: Compliance with regulations and policies is necessary; however, a strong business case exists beyond policies and regulations, which include cost reduction, new revenue streams, competitive advantage, market segmentation, and access to capital.

a. **Cost-efficiency and resource scarcity:** Implementation of resource-efficient models by embracing the circular economy, for instance, directly reduces costs for energy, water, and raw materials (Bocken et al., 2014). CE motives such as cost reduction and materials security are seen as motivations for the implementation, especially in international supply chain trends. (De Mattos & De Albuquerque, 2018; Munaro et al., 2021).

b. **Competitive advantage and market differentiation:** Implementation of SBMs can enhance brand reputation, build customer loyalty, and open new "green" market segments (Boons & Lüdeke-Freund, 2013). International companies see SBMs as routes to differentiation, cost savings through efficient resource use, and access to new markets as service models and circular offerings. SBMs are identified as both compliance and strategic opportunities. (Bocken et al., 2014; Geissdoerfer et al., 2018).

c. **Access to resources and complementary assets:** There is growing evidence that investors and financial institutions are increasingly incorporating Environmental, Social, and Governance (ESG) criteria into their decisions for access to financial services. This makes sustainable companies more attractive for investment (Eccles, Ioannou, & Serafeim, 2014). Access to finance, digital systems, R&D, and sustainable suppliers make SBM implementation easier; on the other hand, resource constraints slow down implementation. (Nosratabadi et al., 2019). *Various authors' input on economic and market advantage gave empirical studies on the fact that international companies take advantage of economic and market situations to implement sustainable business models as they want to be cost efficient by producing on a large scale, better manage the scarce resources, take advantage of market differentiation and competitive advantage, get closer access to resources, and complement assets. Internal drivers are discussed in subsequent paragraphs.*

Internal drivers have to do with an organization's ability to implement based on preparedness in terms of resources and other dynamic capabilities, such as leadership commitment, strategy alignment, organizational capabilities, design practices, top management vision, organizational leadership, dynamic capabilities, and organizational design.

Leadership commitment and strategy alignment: Top management's commitment and clear strategic direction are determinants of successful implementation (Mignon & Bankel, 2022; Baldassarre et al., 2020). The level of leadership commitment and sustainability drive inside the firm accelerates SBMs by allocating resources and legitimizing long-term changes (Bocken & Geradts, 2020; Stubbs & Cocklin, 2008). Sustainable design theory contains a wide range of knowledge on how these environmental and societal issues can be addressed by rethinking industrial products, processes and, more broadly, how organizations operate in the context of a more sustainable socio-economic system (Baldassarre, Keskin, Diehl, Bocken, & Calabretta, 2020).

Organizational capabilities and design practices. Design capabilities (sustainable product/service redesign) and dynamic capabilities to reorganize operations are of immense importance (Baldassarre et al., 2020; Boons & Lüdeke-Freund, 2013).

Dynamic capabilities and organizational design. Empirical evidence shows that international companies with dynamic capabilities can spot and sense opportunities and risks, seize them, and reconfigure resources to turn things around. They are better able to implement SBM innovation at scale across countries. Organizational structures that facilitate cross-unit learning, experimentation, and governance for sustainability are major drivers. (Teece et al., 1997; Bocken & Geradts, 2020).

Summarizing various authors, empirical evidence on the implementation of sustainable business models, drivers are both internal and external. External factors include regulatory pressures, stakeholder influence, technological innovation, economic, and market advantages to drive international companies to implement sustainable business models. Internal drivers include leadership commitment, strategy alignment, organizational capabilities, design practices, top management vision, organizational leadership, dynamic capabilities, and organizational design push international companies to implement sustainable business models. The next sub-section provides empirical studies on barriers to the implementation of sustainable business models. Table 5 shows various implementation strategies identified, their contexts, and tools utilized for the implementation success.

Table 5

Summary of implementation strategies by international companies

Implementation strategy	Application context	Implementation method or tools
Boundary spanning	Creating stakeholder relationships and value distribution	Symbiotic relationships with users and NGOs
Experimentation	Integrating new business model elements	Stepwise integration or pilot programming
Practical Tools and Guidelines	Supporting business model innovation	Cambridge business innovation process
Corporate management method	Implementing organizational changes	Leading by example, involving employees
Risk management	ESG risk identification and mitigation	Risk identification, monitoring, and mitigation
Digital technologies	Monitoring and enhancing resource efficiency	Digital monitoring systems
Business model canvas	Merging different business models	Sustainable business model canvas
Process standardization	Improving efficiency and reducing cost	Centralization of the process

Source: created by the author in accordance with various authors' research on strategies adopted by companies

Stakeholder engagement emerged as a critical implementation component. Boundary spanning strategies focused on creating symbiotic relationships with users and NGOs, while corporate management emphasized leading by example and involving employees in business model creation. Change management strategies included organizational culture and structure considerations as moderators of the change process, centralization of processes, and replacement of inefficient technologies with agile systems.

Barriers to the implementation of sustainable business models. International Companies are faced with obstacles during sustainable business model implementation across internal, external, technical, and financial dimensions.

Internal barriers: International companies struggled to identify, select, develop, and implement sustainable business models as changes caused internal tensions. Established MNCs demonstrated less

flexibility to business model changes, while organizational culture and structure served as moderators of the change process. The lack of understanding of implementation processes in international companies, organizational inactivity, greenwashing, and uncertainties are major challenges.

Organizational inaction and lack of dynamic capabilities. Well-established businesses do not have the routines, structures, and managerial competencies to sense, integrate, and the transformation required to reconfigure business models across multiple markets and units. This is important for large MNCs with complex governance structures. (Teece et al., 1997; Bocken & Geradts, 2020). Process and cultural inertia cause resistance within the organization towards operational change (Dentchev et al., 2018; Baldassarre et al., 2020).

External barriers: Included infrastructure deficits and policy misalignment in the authority of business location, which required multiple approaches involving infrastructure development and policy support.

Every authority and business location has different laws and political environments. Some fragmented regulatory regimes apply in some political environments, and institutional complications across countries affect how international companies implement sustainable business models. For MNCs, variations of rules, standards, and enforcement across markets increase implementation costs and even complicate their business operations (Schaltegger et al., 2016). Every country or region has a different regulatory environment and different infrastructure requirements. These differences complicate implementation, especially in terms of complex international supply chain differences (Gomes et al., 2022; Latino et al., 2024).

Technical and operational barriers include uncertainty in implementation processes. Since there is uncertainty in the process to follow, SBM implementation is perceived as difficult. Ensuring the right materials and technical needs do not come easily for management. Making sure that refurbished products meet quality standards is a challenge. Available literature on business model innovation and sustainable business model concepts does not give a clear direction on how to implement these models. Some businesses lack internal capabilities and skills to implement changes in engineering, designing, and circular supply chain management. Measurement of sustainability impact is difficult due to the fact that there are no available metrics (Baldassarre et al., 2020; Munaro et al., 2021).

Intellectual and management barriers limit the implementation of SBMs. Managers are not sure about the right SBM designs. They fear risk and sometimes lack internal resources and cross-functional collaboration needed to innovate business models (Hansson, 2023; Bocken & Geradts, 2020).

Supply-chain complexity and partner limitations constraints are major technical difficulties barriers. Bocken et al. (2014) identified the lack of supplier capabilities, inability to trace problems, and

weak partner incentives in some countries that limit circular or service models in an end-to-end coordination process.

Financial and economic barriers are major setbacks for the implementation of a sustainable business model. High costs for repair and recycling programs, substantial upfront investments in product design and refurbishment, and overtime costs are major confrontational issues in international companies. Resolution strategies included centralization and technological innovation to reduce inefficiencies and costs; financial incentives and infrastructure development are necessary for business continuity.

Short-term financial orientation and compelling logic cause companies to avoid SBM implementation costs. Profit orientation in the linear business system expects quick returns, shareholder pressure for quarterly results, and established profit models make long-term SBM investments unattractive to these stakeholders. Some international companies fear losing revenue streams when they attempt to compete with existing profit margins (Stubbs & Cocklin, 2008; Bocken & Geradts, 2020). Upfront capital costs for redesigning products and services, establishing take-back systems, or retooling plants can be prohibitive, especially when the payback period is unpredictable (Nosratabadi et al., 2019). High upfront costs and uncertain Return on investment (ROI) are financial constraints and measurement uncertainty that slow implementation across borders. (Spoz, 2021; Mignon & Bankel, 2022).

Misaligned incentives and short-term KPIs are chosen over SBM implementation that has long-term gain. Hence, compensation and performance metrics emphasize short-term financial rewards (Spoz, 2021; Boons & Lüdeke-Freund, 2013). Measurement, accounting, and KPI are applicable to short-term accountability. Measurement of environmental and social values is not in the current accounting principles. Long-term financial benefits are not provided for since accounting principles report only short-term financials. The international business case is even more complex to measure (Geissdoerfer et al., 2018). Zioło et al. (2023) and Mignon & Bankel (2022) stated in their studies that there is a lack of standardized KPIs for SBM outcomes and ESG impacts. Lack of these measures negatively impacts the implementation of SBMs in international companies.

Summarizing the barriers of implementing SBM, various authors identified multiple factors such as internal, financial, external, and technological. They are also reclassified as Economic and financial barriers, organizational and cultural barriers, and systemic and supply chain barriers, which could be addressed from all sectors for a successful implementation of SBM. Strategies identified by various authors are adopted for the successful implementation of SBM. The next sub-chapter creates a research model for the research work.

Concluding this subchapter, empirical literature shows conflict between external and internal drivers and inherent barriers. SBM in an international company can be successfully implemented when

management chooses strategic options. Success depends on its ability to strategically leverage the drivers for good and overcome the barriers. The research on SBM implementation in international companies described an organizational-level process driven by boundary spanning, experimentation, and digital technologies as main strategies. These strategies are leadership commitment-enabled, and stakeholder pressures are coordinated to achieve environmental and economic impacts, but limited by organizational resistance, infrastructure problems, and the basic challenge that 90% of existing models only partially integrate all three sustainability dimensions, namely, Social, environmental, and economic dimensions.

2.2. Research model for the implementation of sustainable business models in international companies

Analyzing different studies in relation to the implementation of sustainable business models in international companies is important. Mignon & Bankel (2022) performed a systematic review of 87 empirical cases in Asia and Europe. It was identified in their findings that four main sustainable business models are achieved through different business model innovation strategies. Strategies adopted depend on internal and external factors. More specifically, businesses use boundary spanning and experimentation as strategies to innovate their BMs. Gomes et al. (2022) studied the merger of two Brazilian Logistics companies. The study provides micro-level insights on operational changes that were made in processes, partnerships, and how local institutional context shapes implementation. Their findings show that the merger allowed market diversification because of the combination of B2B and B2C models, better serving the customers that make up the market segment. The expansion of the market allowed for an increase in revenues and an internal rate of return of 8.5% per year. Baldassarre, Keskin, Diehl, Bocken, & Calabretta, (2020) created a framework which integrates sustainable design theory with business concepts, clustered into four streams: eco-design, product service system design, sustainable business model design, and collaborative ecosystem design. Sustainable design theory contains an extensive body of knowledge on how these environmental and societal issues can be addressed by rethinking industrial products, processes and, more broadly, how organizations operate in the context of a more sustainable socio-economic system (Baldassarre, Keskin, Diehl, Bocken, & Calabretta, 2020). De Mattos & De Albuquerque (2018) identify enabling factors and transition strategies toward a circular economy (CE) from their cases; the enablers identified are regulatory push, industrial symbiosis, and technology, which map onto implementation levers for SBMs in international contexts.

Concept of the research model on the implementation of SBM. All indications from the analysis of empirical studies show that the implementation of SBM is influenced by External and Internal

factors. The model proposes that SBM implementation is driven by a combination of internal (endogenous) and external (exogenous) factors, enabled through organizational capabilities, and leads to sustainability and competitive outcomes. Table 6 summarizes the concept of SBM implementation in international companies.

Table 6

Concept summary of the research model of SBM implementation in international companies

Drivers	Variations	Impact
Exogenous Drivers	Regulatory Pressure	positively associated with the degree of SBM implementation in MNCs
	Stakeholder and Market pressure	
	Perceived strategic opportunity	
Endogenous Drivers (Dynamic capabilities and organizational design)	Supply-chain integration and partner capability	enablers that happen because of drivers
	Partnerships & ecosystem connectivity	
	Digital & data capability	
Barriers	Short-term financial orientation	Weaken the positive relationship between SBM implementation and implementation effectiveness
	Resource constraint	
	Institutional complexity across markets	
Interaction and Moderators	Dynamic capabilities moderate the negative effect of resource constraints on SBM implementation. The relationship between SBM implementation and Implementation effectiveness is not uniform. This suggests that factors such as Industry type, company size, and geographic dispersion will moderate these relationships.	High dynamic capabilities mitigate the negative impact of limited resources. This variable acknowledges that the strength and nature of the international company are major influences on the SBM implementation effectiveness.
SBM Implementation effectiveness (Dependent Variable)	Environmental performance (ENV)	Reductions in carbon footprint, waste, and resource use.
	Social Performance (SOC)	Improvement in employee well-being, community relations, and supply chain labor standards
	Economic Performance (ECO)	Cost savings, new revenue streams from sustainable products, and enhanced brand values.

Source: created by the author.

In summary, SBM is implemented due to various factors in the table above. Various authors have highlighted internal and external factors that drive international companies to implement SBM. External drivers like regulatory pressure, stakeholder, and market pressure, and perceived strategic opportunity, and internal factors like supply chain integration and partner capabilities, Partnership and ecosystem capability, digital and data capability, are positively associated with the degree of SBM implementation in MNCs as suggested by Schaltegger et al., 2016; Geissdoerfer et al., 2018.

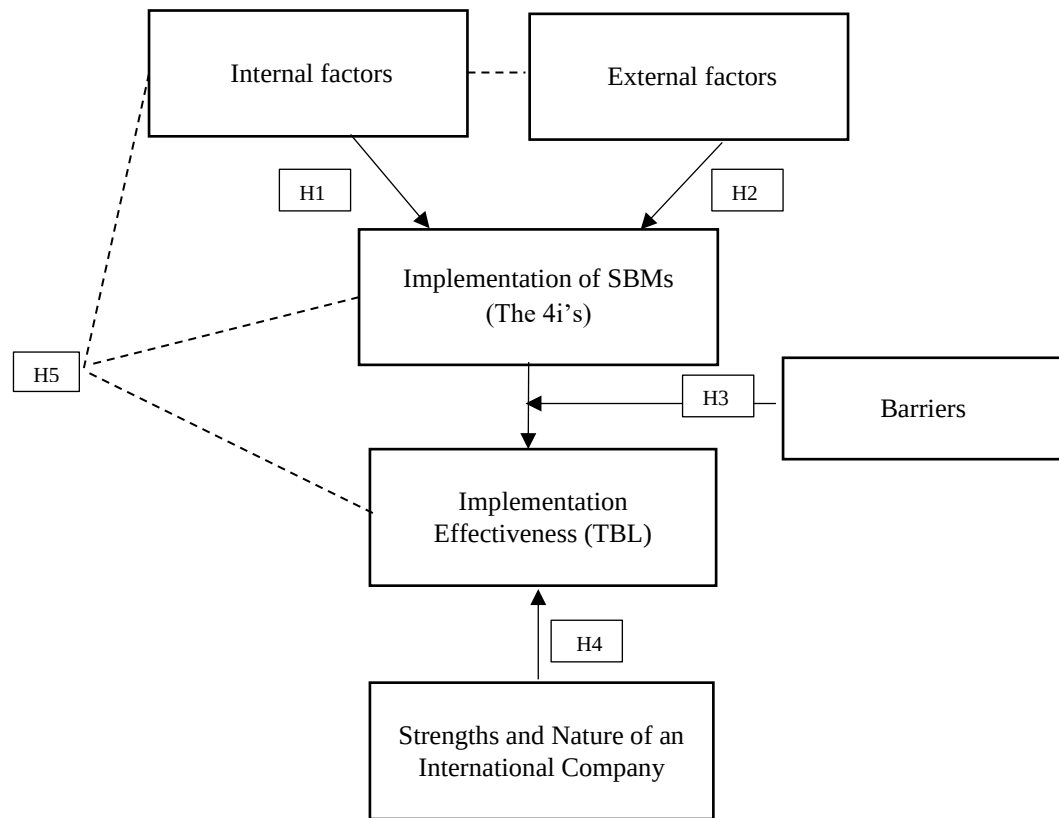
Barriers such as short-term financial orientation, resource constraints, and institutional complexity across markets weaken the positive relationship between drivers and SBM implementation as found in the literature provided by Stubbs & Cocklin (2008) and Bocken & Geradts, 2020. Dynamic

capabilities moderate the negative effect of resource constraints on SBM implementation, thus high dynamic capabilities mitigate the negative impact of limited resources as suggested by Teece et al., 1997; Bocken & Geradts, 2020. This variable acknowledges that the strength and nature of the relationship between the drivers and barriers and SBM implementation are not the same across the board. The research suggests that factors such as Industry, Company Size as in large MNC or SME, and geographic dispersion will tone down these relationships. Based on these literature sources that identified drivers, barriers, and moderating factors, this research formulates some hypotheses that will be tested in the next chapter.

Based on this model and discussions from various literature sources, it can be confidently stated that all of the factors mentioned earlier interact with one another to produce a successfully implemented sustainable business model in international companies. The research will test the following hypotheses in the empirical part (Part 3) of this thesis:

- **Hypothesis 1:** Internal factors positively influence SBM implementation in international companies
- **Hypothesis 2:** External factors positively influence the implementation of SBM in international companies.
- **Hypothesis 3:** Barriers influence SBM implementation effectiveness in international companies.
- **Hypothesis 4:** The strength and nature of the international company are major influences on the SBM implementation effectiveness.
- **Hypothesis 5:** Implementation mediates the relationship between internal and external factors and SBM effectiveness

Figure 2 shows the research model for the implementation of Sustainable business models in international companies based on the summary of empirical research identified by various authors.



Source: created by the author based on theoretical and empirical findings

Figure 2. Research model for the implementation of sustainable business models by international companies

The research model in Figure 2 is based on the empirical findings of various authors in this aspect of the master's thesis. Model design captures the complex nature of sustainable business model (SBM) implementation as identified in this aspect of the study. Implementation of SBM is not a single isolated event. The model shows it as a process shaped by a number of factors that work together to implement SBM and also to achieve SBM effectiveness. Internal factors emanate from the business itself, while external factors are outside the business's immediate environment. Internal and external factors flow into the implementation of SBM, as shown in the figure. The model has five main constructs: internal factors, external factors, barriers, SBM implementation, SBM effectiveness, and the strength and nature of the international company flowing into implementation effectiveness from the opposite direction. Implementation and its effectiveness are connected through a series of directional relationships that will be tested empirically through the five hypotheses formulated in this aspect of the study.

Summarizing part two, scientific data were sourced from academic journals on the empirical level of research done on the implementation of sustainable business models in international companies. Implementation across some business sectors, geographic locations, and assorted sizes of companies. The major drivers identified were internal and external. Internal drivers include management commitment, the business's own capabilities, and dynamic capabilities. External drivers include regulatory pressure, stakeholder influence, market pressure, and perceived opportunities for international companies. There is an inverse relationship between dynamic capabilities and barriers to the implementation of SBM. The size of a business, geographic coverage, and industry-specific factors determine the outcome of the implementation. Implementation outcome is measured by the performance of the triple bottom-line, being environmental, social, and economic performance. A model was developed, based on this model, there will be hypothesis testing on the relationships between internal and external factors, barriers, and dynamic capabilities, and the outcome of implementation.

External drivers include regulatory pressure, stakeholder influence, and market pressure, leading to perceived opportunities out there for these international companies. External drivers are influential on internal drivers. Internal drivers include dynamic capabilities measured through leadership commitment, potential for innovation, cost reduction opportunities, and employee motivation, coupled with a strong organizational culture that encourages innovation. The dynamic capabilities of an international company fight barriers that show up in the form of economic and financial barriers (EFB), measured through high upfront investment costs, perceived financial risk, and short-term profit pressure. Organizational & Cultural Barriers (OCB) are also seen through resistance to change, lack of sustainability knowledge and skills, and siloed organizational structures. Systemic & Supply Chain Barriers (SSB) are identified through supply chain complexity, lack of transparency, and technological minorities, where some companies are not abreast of systems and trends.

SBM implementation effectiveness can be measured by the triple bottom line, namely: environmental, social, and economic performance. This is a multidimensional measurement tool for which some statistics were provided in this chapter. Environmental performance relates to reducing carbon footprint, waste reduction, and resource conservation. Social performance is also seen through employee well-being, community relations, and supply chain integration. The economic performance of an international company is identified through cost savings, new revenue streams from sustainable products, and enhanced brand value.

Part 2 has synthesized existing research on SBM implementation in international companies. It was revealed that implementation outcomes depend on the context in which they happened. The fact that barriers such as resource constraints, operational complexity, and resistance to change can weaken the

effectiveness of SBM implementation, the implementing company characteristics, including size, international experience, and organizational structure, affect implementation success. This synthesis indicates that current research recommends further research into how SBMs are implemented and emphasizes the need for integrated analytical frameworks. It has also suggested a model for the implementation of sustainable business models in international companies. The model identifies the interactions between external and internal drivers, moderating barriers, and business-specific contextual factors. It provides a structured model for understanding SBM implementation outcomes. This model recognizes both theoretical and practical value by guiding future empirical research and supporting managers in designing and implementing sustainable business models that are aligned with their organizational context. This study also contributes to advancing knowledge on sustainable business models. It offers an integrated foundation and a practical implementation model for international companies to achieve long-term sustainable growth. Positive links between internal and external factors for the achievement of successful business models in multinational companies.

Summarizing this part, the implementation of SBM's research model shows that there are interactions between internal factors, external factors, barriers, strategies, and strengths, and nature of a company to implement SBM. This is explored further in chapter three by the use of a research survey instrument.

In the next part, survey questionnaires are used to collect data on the implementation of sustainable business models in international companies. "Pollmill" surveys are designed and shared with employees, managers, and sustainability officers of international companies to collect quantitative data on sustainability practices; this will help to confirm the empirical data from the research.

3. EMPIRICAL RESEARCH OF THE IMPLEMENTATION OF SUSTAINABLE BUSINESS MODELS IN INTERNATIONAL COMPANIES

This aspect presents research methods, data analysis, a discussion of the results, and an evaluation of the results on the implementation of sustainable business models in international companies.

3.1 Research methodics

The aim of this research. This aspect sets out to investigate the factors influencing the implementation of sustainable business models (SBMs) in international companies.

This aim incorporates the evaluation of the effectiveness of SBM implementation on the three dimensions of the triple bottom line. It is also based on the theoretical and research models in the previous two aspects of this thesis. The research focuses on the international business context as well as some local companies in Lithuania and Ghana. It also incorporates perspectives from companies operating across various sectors and coverage levels.

Objectives of the research.

1. To identify internal factors influencing the implementation of sustainable business models in international companies.
2. To identify external factors influencing the implementation of sustainable business models in international companies.
3. To evaluate SBM implementation and barriers in international companies.
4. To establish a link between internal and external factors with SBM implementation and SBM effectiveness.

Research methods and hypotheses. Based on the theoretical framework in chapters 1 and 2, 5 research hypotheses were formed to evaluate the relationship between major organizational factors and SBM adoption.

This research adopted a quantitative design. A structured Pollmill online survey questionnaire was used as the primary data collection tool. The quantitative method offers the researcher the ability to use numbers over observations. This is generally considered to provide greater quality and accuracy because of the non-subjective nature of the approach (Marques Kneipp, Reis Favarin, Eccel Pontelli, da Silva D'Avila, & Marques Kumer, 2023; Babbie, 2021). Therefore, a quantitative method is chosen to statistically explore the direct relationship between SBM implementation, internal and external factors, and to establish the impact of these variables on the effectiveness of sustainable business models in international companies. The survey questionnaire had 15 questions. The Survey questionnaire is

grouped as follows: respondent demographics and organizational characteristics, internal factors, external factors, barriers, strategies, implementation levels, and sustainability outcomes.

A Likert scale (1=Strongly Disagree to 5= Strongly Agree) was used for questions measuring perceptions (Q9-Q11, Q13-Q15). Also, nominal and categorical scales were used for demographics and organizational characteristics (Q1-Q8, Q12). Analysis of data collected was done by the use of IBM SPSS Statistics. Table 7 gives a summary of the research method employed in line with the objective.

Table 7

Summary of research objectives and methods

Research Objective	Data Collection Tool	Analysis
To identify internal factors influencing the implementation of sustainable business models in international companies.	Likert scale survey (Q9)	Descriptive statistics, Reliability analysis, Regression
To identify external factors influencing the implementation of sustainable business models in international companies.	Likert scale survey (Q10)	Descriptive statistics, Reliability analysis, Regression
To evaluate SBM implementation barriers.	Likert scale survey (Q11)	Descriptive statistics, Reliability analysis, Regression, Correlation analysis
To evaluate the effectiveness of SBM implementation across sizes of companies.	Likert scale survey (Q15), (Q14)	Descriptive statistics, cross-tabulation
To establish a link between internal and external factors with SBM implementation and SBM effectiveness	Nominal (Q9), (Q10), (Q11) (14) (Q15)	Frequency analysis, Regression

Source: created by the author.

The questionnaire is provided in Appendix 1, and consists of 4 parts:

1st part “General information” (1 – 8 questions). This part aims to find out the following data about the respondents: consent to participate, respondents’ profiles in their role in the company they represent, and years of professional experience. Company profile with respect to the sector in which the company operates, the number of employees, the company’s coverage, and implementation awareness.

2nd part “Internal and external factors of influence” (9 – 10 statements). This part aims to find out the data on the level of influence with respect to internal and external factors.

3rd part “barriers and moderating factors” (11 – 13 statements). This part aims to find out the data on barriers hindering the implementation and how these barriers are managed for implementation effectiveness.

The 4th part, “implementation and effectiveness” (14-15 statements), also aims to find out the data on the implementation and the effectiveness of implementing sustainable business models. This assessment is based on the triple bottom line achievements resulting from the implementation.

Four implementation dimensions were measured using the Likert scale. These are: Internal factors, external factors, barriers, and strategies, to assess how SBM is implemented in international companies. Table 8 summarizes the hypotheses according to the questions of the survey instruments.

Table 8

Summary of questions according to the hypothesis

Hypothesis	Questionnaire statement
Independent variable: SBM implementation	14. On a scale of 1-5, indicate your level of agreement on how sustainable business models are implemented
	Sustainability is integrated into the core business strategy
	Sustainability influences key business decisions
	Sustainability performance is actively measured
H1: Internal factors positively influence sustainable business model implementation	Q. 9 and Q14: Answer on a scale of 1-5 the level of agreement with the influence of internal factors on SBMs implementation
	Top management supports sustainability initiatives
	Sustainability is embedded in organizational culture
	Employees are encouraged to adopt sustainable practices
	The company has sufficient resources and expertise
H2: External factors positively influence sustainable business model implementation	Q 10 and Q14: Assess the external influence on the implementation of Sustainable business models on a scale of 1-5 where 1 is strongly disagree, and 5 is strongly agree.
	Government regulations influence sustainability adoption
	Customer demand drives sustainability practices
	Competitive pressure encourages sustainability
	Technology and digitization drive sustainable practices
H3: Barriers influence the relationship between SBM implementation and its effectiveness	11 and Q14: On a scale of 1-5, describe how severe each barrier is to the implementation of Sustainable business models in your organization
	High implementation costs
	Lack of expertise
	Resistance to change
	Supply chain limitations
H4: The strength and nature of the international company are major influences on the effectiveness of the SBM implementation.	12. Which strategies has your company used to mitigate barriers? (Multiple choice)
	13. On a scale of 1-5, give your response to the effectiveness of strategies
	Our strategies effectively address sustainability barriers
	Our company adapts quickly to sustainability challenges
H5. SBM Implementation mediates the relationship between internal and external factors and SBM effectiveness	15. Assess the evidence of the overall effectiveness of implementing sustainable business models.
	Economic Performance
	Sustainability initiatives improved cost efficiency
	Sustainability increased revenue or market share
	Sustainability strengthened competitive advantage
	Environmental Performance
	Our environmental impact has decreased
	Resource efficiency (energy, materials) has improved
	Waste and emissions have been reduced

Table 8 (continued)

Hypothesis	Questionnaire statement
	Social Performance
	Customer satisfaction has improved
	Employee engagement has increased
	Our company contributes positively to society

Source: Created by the author according to hypotheses

Statistical methods employed are listed in sequence below: (1) descriptive statistics to profile respondents and summarize construct means; (2) reliability analysis (Cronbach's Alpha) to assess the internal consistency of measurement scales; (3) Pearson correlation analysis to test the research hypotheses and determine the predictive relevance of independent variables on SBM implementation, and (4) cross-tabulation to determine implementation across company sizes and to determine familiarity of SBM among company sizes and (5) Spearman's Rank Correlations.

Survey sample. The target population for this study consists mainly of business professionals employed in companies, engaged in operational activities, and the decision-making categories across various industries internationally. This includes personnel in managerial, operational, and sustainability-focused roles. Given the broad nature of the research topic, sustainable business model implementation, the population was defined as individuals with sufficient organizational knowledge who are in a position to provide informed responses on their company's sustainability practices and strategies. A population refers to the entire group relevant to the research objectives (Creswell, 2014). Due to the broad and dispersed nature of this population, a non-probability sampling approach was used. The researcher specifically used the Quota Sampling criterion to select a predetermined number of units from service-oriented international and, in some cases, local companies. These subgroups are chosen non-randomly to ensure that the sample reflects the true representation of people involved in either decision-making or operational characteristics of the population. Even though convenient sampling comes with limitations concerning generalizability, it is generally accepted in exploratory and descriptive quantitative research, especially in management and sustainability studies (Saunders, Lewis, & Thornhill, 2019)

This study received 141 responses from participants who took part in the survey. Participants were selected based on their accessibility and willingness to respond to the online survey distributed through various digital platforms. Data were collected using the Pollmill online survey administered over one month, with follow-up reminders sent to respondents in the third and fourth weeks. This sample size is appropriate for social science research based on studies by Sekaran and Bougie (2020), who recommend sample sizes between 30 and 500 as suitable, and another study by Hair et al. (2019), which asserts that samples exceeding 100 observations are sufficient for statistical analysis. On the flip side,

studies by Taha (2026) mentioned that confidence levels and acceptable margins of error commonly guide sample size determination. Hence, the sample size of 141 was guided by confidence levels and an acceptable margin of error amidst the other 2 authors' sample size recommendations. This is considered fair for this study. To determine the adequacy of this sample size, the study applied the generally accepted rule of thumb in multiple regression analysis, which recommended a minimum of 10 to 20 per predictor variable (Hair et al, 2019). Using five independent variables in regression models, a minimum sample of 50 to 100 respondents was required. The achieved sample of 137 valid responses exceeds this threshold and provides sufficient statistical power for the analysis involved. This sample size is further justified based on Cohen's (1992) recommendation that a sample of 119 respondents is needed to detect medium effect sizes at 80% power with 5 predictors in regression. The current sample satisfies this condition.

The link for this survey was distributed through professional networks, LinkedIn, organizational contacts, and direct contact with company representatives across various sectors. A total of 141 responses were received, yielding an initial response rate of approximately 23.5%. A final valid sample of 137 responses was retained for analysis following the exclusion of 4 respondents who did not consent to participate (Q1=No), which gave an effective response rate of 22.8%

Research organization. The survey target was professionals across various organizational levels and industries to ensure a true representative sample of sustainability perspectives. Respondents include top management, middle management, operational staff, and sustainability or CSR specialists from various companies across industries, finance, logistics, public, and technology sectors in Lithuania and Ghana. Both international and local companies were included to secure a broad range of sustainability implementation experiences. The summary of respondents' profiles and organizational characteristics based on frequency analysis of questions 2 to 8 is presented in the descriptive statistics as respondents' profiles and organizational characteristics

3.2. Research data analysis and discussion of the results

This sub-part presents and analyzes data from the empirical study and findings relating to the factors contributing to the implementation of sustainable business models in international companies in a structured and sequential manner. It presents the findings from the quantitative analysis of the survey data collected from 137 valid respondents. The analysis is presented in the following order: confirmation scale for reliability, descriptive statistics, and assessing inter-construct analysis, cross-tabulation analysis, correlation analysis, and multiple regression analysis to test the hypothesis.

Cronbach's reliability assessment. This research made use of Cronbach's alpha coefficient to test each measurement scale to ensure it is reliable enough. The hypotheses were formulated after the

internal consistency of the questionnaire survey scale was assessed by the use of Cronbach's alpha (α). This is one of the most commonly used reliability coefficients in social science. Research by Dorsah (2026) concluded that Cronbach's alpha remains the most widely used and cited measure of internal consistency in social science research. The benchmark of reliability is $\alpha \geq 0.70$ and 0.80, revealing strong internal consistency. Dorsah (2026) also recommended that reliability thresholds should be justified based on the purpose of the scale, dimensionality, item characteristics, and the characteristics of the target sample, ensuring that conclusions about instrument quality are meaningful and defensible. The recommended scale measures the degree to which items within a scale correlate with one another. It also shows how consistently they measure a single item. A low α value proposes that the items be measured using in different dimensions. In this study, five composite variables were constructed. These are: Internal factors, External factors, Barriers, Strategies, SBM implementation, and SBM Effectiveness. Each construct has between three and six Likert scale items measured from 1, Strongly disagree, to 5, Strongly agree.

Table 9

Cronbach's alpha reliability assessment of survey scales				
Construct	Survey Q	No. of Items	Cronbach's alpha (α)	Verdict
Internal factors (H1)	Q9	4	0.898	Good
External factors (H2)	Q10	4	0.832	Good
Barriers (H3)	Q 11	3	0.832	Good
Strategies effectiveness (H4)	Q 13	2	0.738	Acceptable
SBM Implementation (DV)	Q14	4	0.863	Good
SBM Imp. effectiveness (DV)	Q15	9	0.916	Excellent

Source: Created by the author based on data from the survey. Note: all α values exceed the minimum threshold of 0.70 (Dorsah, 2026)

Table 9 shows that all six constructs exceed the minimum acceptable threshold of 0.70 as recommended in the literature. SBM effectiveness had the highest alpha value of $\alpha=0.916$, which is reliable. Internal factors show $\alpha=0.898$ and SBM implementation $\alpha=0.863$. Results show excellent, good, and the weakest is acceptable, but even above the benchmark value, reliability is assured. External Factors and barriers simultaneously show alpha values of 0.832, while strategy effectiveness was the least, with 0.738. Results show that all measurement scales exhibit adequate internal consistency and are reliable for further analysis.

Descriptive statistics. This section presents descriptive statistics of the main variables used in the study, including internal factors, external factors, barriers, and sustainable business model implementation. The analysis provides an overview of respondents' perceptions regarding sustainability

practices within their organizations. Tables present descriptive statistics for questionnaires and scales used.

Table 10

Respondents' profiles and organizational characteristics (N=137)

Characteristic	Category	Frequency (N)	Percentage (%)
Role in Company	Operational staff	60	43.8%
	Middle management	42	30.7%
	Top management	12	8.8%
	Sustainability/CSR specialist	4	2.9%
	Other	17	12.4%
Experience	2–5 years	53	38.7%
	More than 10 years	35	25.5%
	Less than 2 years	29	21.2%
	6–10 years	19	13.9%
Industry	Finance and Business Services	45	32.8%
	Public and social services	21	15.3%
	other	21	15.3%
	Industrial (Manufacturing & Construction)	19	13.9%
	Tech and other services	17	12.4%
	Transport and Logistics	10	7.3%
Company Size	Medium (50-249)	36	26.3%
	Large (250-999)	36	26.3%
	Very Large (1000+)	27	19.7%
	Small (10-49)	22	16.1%
	Micro (1-9)	16	11.7%
Company Coverage	International	52	38.0%
	Local	42	30.7%
	Global	22	16.1%
	Multinational	21	15.3%
SBM Familiarity	Somewhat Familiar	82	59.9%
	Very Familiar	40	29.2%
	Not familiar	15	10.9%
Sustainability Policy	Yes	115	83.9%
	No	1	0.7%

Source: Created by the author in accordance with survey responses

The majority of respondents are operational staff (43.8%), followed by middle management (30.70%), and top management (8.8%), and very few identified themselves as sustainability or CSR specialists (2.9%). The distribution of respondents shows the practical reality that implementation of SBM involves all personnel across organizational levels; it is not exclusive to senior roles.

In terms of professional experience, the majority had 2 to 5 years of experience (38.7%), followed by 25.5% in the category of more than 10 years of experience. This result suggests a practically experienced respondent base that can provide an informed assessment of sustainability practices. Most

of the respondents were also from the Finance and Business Service sector (32.8%), followed by social services (15.3%), and Technology and other services (12.4%). This result shows that most of the respondents are in the service sector, which even makes it unique, as most sustainability studies were focused on the industrial sector.

In terms of company size, respondents were relatively well distributed across size categories, with medium and large companies each having (26.3%) most represented, followed by very large companies with over 1,000 employees (19.7%). With respect to geographical coverage, the largest proportion of responses was obtained from internationally operating companies (38.0%), followed by locally focused companies (30.7%), and global or multinational organizations (31.4%). This distribution reflects the research focus on the implementation of SBM in international companies.

Familiarity response shows the majority of respondents in the somewhat familiar category (59.9%), while 29.2% reported they were very familiar, and only 10.9% indicated no familiarity. The response distribution suggests that respondents have adequate knowledge of the subject matter to provide meaningful responses. A more concrete response from 83.9% of respondents reported that their companies have a formal sustainability policy in place, indicating that the surveyed organizations are actively engaged in SBM implementation at the institutional level. It is also noted that Q8 recorded 15.3% missing responses (N=21), which were retained in subsequent analysis and handled as no response to retain the numbers and reliability of data analyzed.

Table 11

Descriptive statistics for Likert scale constructs (N=137)

Item	Construct	Statement	Mean	SD
Q9A1	Internal Factors	Top management supports sustainability initiatives	4.08	1.015
Q9A2		Sustainability is embedded in organizational culture	3.88	1.191
Q9A3		Employees are encouraged to adopt sustainable practices	3.95	1.190
Q9A4		The company has sufficient resources and expertise	3.72	1.229
Q9	Internal Factors	Combined	3.9069	1.01415
Q10A1	External factors	Government regulations influence sustainability adoption	3.84	1.016
Q10A2		Customer demand drives sustainability practices	3.74	1.146
Q10A3		Competitive pressure encourages sustainability	3.75	1.143
Q10A4		Technology and Digitization drive sustainable practices	3.96	1.178
Q10	External Factors	Combined	3.8230	0.91513
Q11A1	Barriers	High implementation costs	3.33	1.058
Q11A2		Lack of expertise	2.96	1.333

Table 11 (continued)

Item	Construct	Statement	Mean	SD
Q11A3		Resistance to change	3.04	1.242
Q11A4		Government regulations influence sustainability adoption	3.01	1.185
Q11	Barriers	Combined	3.0839	0.98531
Q13A1	Imp. Strategy effectiveness	Our strategies effectively address sustainability barriers	3.96	0.848
Q13A2		Our company adapts quickly to sustainability challenges	3.70	1.010
Q13	Imp. Strategy effectiveness	Combined	3.8285	0.83013
Q14A1	SBM Implementation	Sustainability is integrated into the core business strategy	3.98	0.800
Q14A2		Sustainability influences key business decisions	3.90	1.024
Q14A3		Sustainability performance is actively measured	3.75	1.070
Q14A4		Sustainable practices are actively implemented	3.82	1.038
Q14 A1-A4	SBM Implementation	Combined	3.8613	0.83188
Q15A1	SBM Effectiveness	Sustainability initiatives improved cost efficiency	3.77	0.934
Q15A2		Sustainability increased revenue or market share	3.59	1.068
Q15A3		Sustainability strengthened competitive advantage	3.84	1.066
Q15A4		Our company has significantly reduced its environmental impact	3.51	1.189
Q15A5		Resource efficiency (energy, materials) has improved	3.72	1.136
Q15A6		Waste generation and greenhouse gas emissions have been reduced	3.53	1.112
Q15A7		Customer satisfaction has improved	3.72	1.136
Q15A8		Employee engagement has increased	3.67	1.142
Q15A9		Our company contributes positively to society	4.12	1.022
Q15A1-Q15A9	SBM Effectiveness	Combined	3.7194	0.84320
Q12A1	Imp. Strategy Count	Training programs	0.69	0.463
Q12A2		External partnerships	0.35	0.479
Q12A3		Technology adoption	0.47	0.501
Q12A4		Process redesign	0.37	0.485
Q12A5		Policy changes	0.42	0.495
Q12A6		Environmental, Social, and Governance (ESG) integration	0.47	0.501
Q12A1-Q12A6	Strategy count	Combined	2.7810	1.73508

Source: Created by the author based on data analysis. Note: Scale of measurement ranges from 1 (strongly Disagree) to 5 (Strongly Agree) for all questions except Q 11 and Q12, which are 1(Negligible) to 5 (Major Barrier) and Multiple choice, respectively.

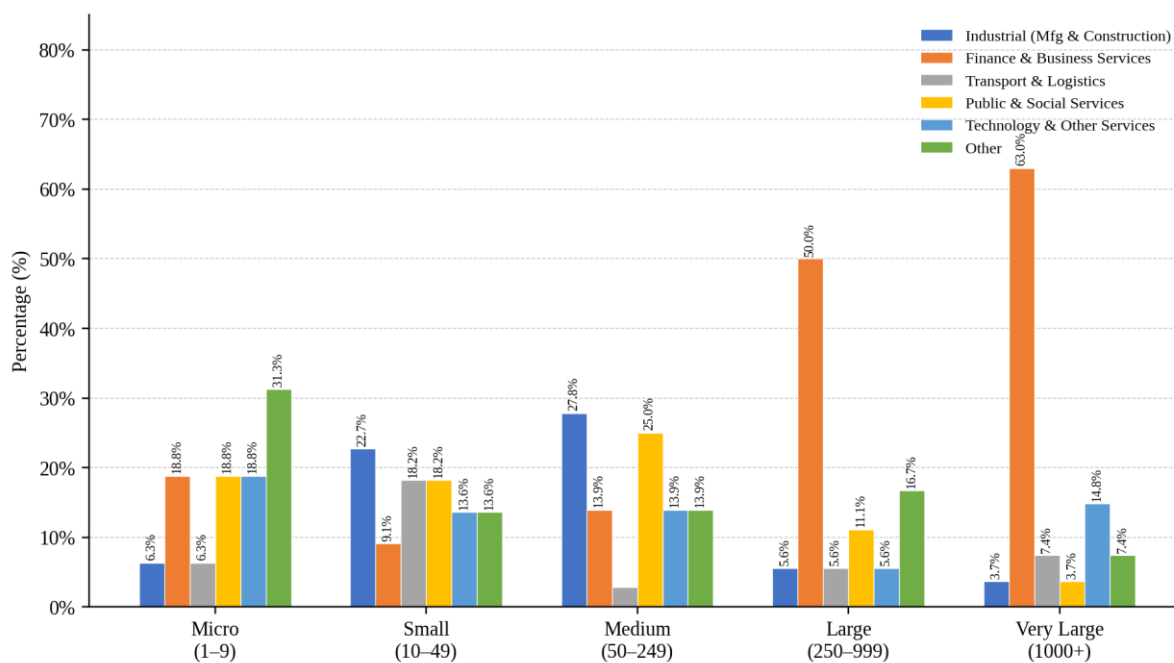
Table 12

Descriptive statistics for composite variables

construct	N	Mean	SD	Skewness	Kurtosis
Internal Factors	137	3.9069	1.01	-1.182	1.586
External Factors	137	3.8230	0.92	-1.462	3.737
Barriers	137	3.0839	0.99	-0.602	0.758
Strategy Effectiveness	137	3.8285	0.83	-0.544	0.661
Implementation	137	3.8613	0.83	-0.848	1.586
SBM Effectiveness	137	3.7194	0.84	-0.836	1.815

Source: Created by the author based on survey data. Score on a 1-5 Likert scale. Note. All skewness and kurtosis values are within acceptable ranges for parametric analysis. External Factors kurtosis (3.737) is slightly elevated but non-critical given N = 137.

All constructs concentrate in the upper-moderate to high range (3.08-3.90). Statistics here suggest that respondents' perception of internal and external factors for SBM implementation acknowledges moderate-to-high barriers, and reports reasonably high implementation and strategy effectiveness. Internal factors had the highest mean, $m=3.90$, which shows that internal organizational factors are stronger. Barriers had the lowest mean of 3.08, indicating consequential barriers that can be managed. Cross-tabulation analysis of industry by company size was done to identify structural patterns. Figure 3 shows the distribution of industry categories within each company size group.



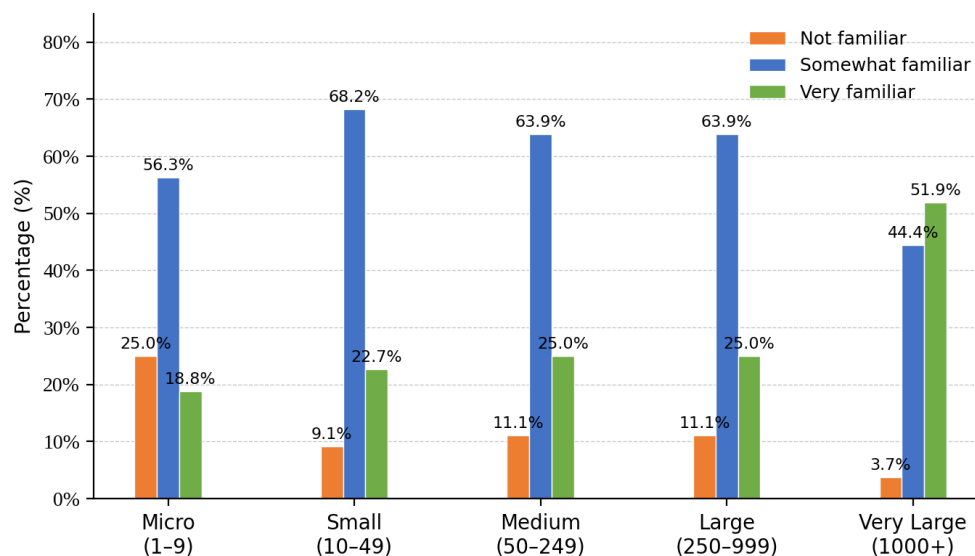
Source: Created by the author based on data from the survey (Q4 & Q5)

Figure 3. Distribution of industry by company size Q4 & Q5

Figure 3 shows clear patterns. Finance and business services companies are among the largest organizations, with 50% of large companies and 63% of very large companies, compared to only 18.8% of micro companies. These statistics are in line with the financial sector’s historically high capital intensity and established sustainability reporting framework (KPMG 2022). Industrial companies, on the other hand, are concentrated in small and medium companies with 22.7% and 27.8% respectively, declining in the larger size categories. In like manner, public and social services are mostly micro, small, or medium. This could be because these institutions are decentralized in Lithuania. On the flipside, technology and other services are spread out across all company sizes. The difference in size and industry is important for the results of our hypothesis. This shows that larger companies in areas that require huge operating capital, such as the service sectors, may have different external and internal factors that drive their SMB implementations and effectiveness

Cross-tabulation analysis of SBM familiarity by company size

The second cross-tabulation examines familiarity with SMBs by company size. Figure 4 gives a summary of the responses obtained.



Source: Created by the author based on survey responses

Figure 4. Distribution of SBM familiarity by company size

The results in Figure 4 show a clear positive relationship between company size and SBM familiarity. The very large companies with 1,000+ employees had 51% of respondents, showing that they are very familiar with SBM. A higher than the 18.8% recorded in Micro firms and 22.7% in Small firms.

Conversely, unfamiliarity was high in Micro companies (25.0%), gradually declining as organizational size increased. Statistics in this chart confirm Bocken et al. (2014) and Schaltegger et al. (2016), in their research findings that larger companies invest more in sustainability knowledge through training, dedicated ESG teams, and reporting frameworks. The EU's Corporate Sustainability Reporting Directive (CSRD), in effect from 2024–2025, is expected to raise SBM familiarity among large and very large businesses due to its mandatory disclosure requirements for businesses

The higher familiarity among large companies suggests an urgent response to strategies and effectiveness that are more detailed and informed, which makes the regression results more reliable in the next section. For smaller and micro businesses, the lower familiarity likely contributes to why financial resource constraints and knowledge gap scored the highest means in the descriptive analysis. Cross-tabulated statistics make hypothesis 4 relevant to the study.

Correlation analysis: Pearson correlation analysis was used to further examine the relationship between all study variables. Table 13 shows a summary of the Pearson Correlation Matrix (N=137)

Table 13

Pearson correlation matrix						
Correlation	Internal Factors	External Factors	Barriers	strategy. effectiveness	SBM Implementation	SBM Effectiveness
Internal Factors	1	0.720	0.381	0.747	0.758	0.765
External Factors	0.720	1	0.447	0.640	0.638	0.672
Barriers	0.381	0.447	1	0.342	0.371	0.402
Strategy effectiveness	0.747	0.640	0.342	1	0.806	0.762
SBM Implementation	0.758	0.638	0.371	0.806	1	0.818
SBM Effectiveness	0.765	0.672	0.402	0.762	0.818	1

Source Created by the author according to survey responses: Note: $p < 0.001$ (2-tailed). All correlations are significant at the 0.001 level

Table 13 shows the foundational evidence for the research objective. All independent variables prove statistically positive correlations with the dependent variable at $p < 0.001$ level. SBM effectiveness was highest in the chart with SBM implementation at $r = 0.818$, Internal factors came up second at $r = 0.758$, External factors came up third at $r = 0.638$, and barriers were the least at $r = 0.371$. In like manner, SBM Effectiveness, Internal factors recorded the strongest correlation at $r = 0.765$, External factors $r = 0.672$, and barriers $r = 0.402$. The findings give assurance that the hypothesized relationships are supported for further analysis through regression, because it falls below the critical threshold of .85, this further analysis was recommended by Field (2018). These results from the constructs are independent. The two variables were kept as independent predictors in the regression analysis. The basic findings in this table

support the existence of a meaningful relationship between the study's constructs and are necessary for formal hypothesis testing.

3.3 Evaluation and discussion of results

This section discusses the results of the hypothesis testing obtained during the analysis of the survey data, which revealed the implementation of SMB in international companies. The first to the third hypotheses were supported, the fourth hypothesis was not supported, while the fifth hypothesis, H5, was partially supported. Each hypothesis is discussed in more detail below.

Hypothesis 1: Internal factors positively influence SBM implementation

A simple linear regression was run, making SBM implementation the dependent variable and internal factors the single independent variable for the test of confirmation for the H1 hypothesis. The model proved statistically significant at $F(1, 135) = 181.821$, $p < .001$. The model proved that internal factors explained 57.4% of the variance in SBM implementation at $R^2 = .574$, Adjusted $R^2 = .57$. Table 14 is the summary of the regression model result.

Table 14

Simple linear regression. Internal factors positively influence SBM implementation (H1)						
Predictor	B	Std. Error	β	t	Sig.	VIF
Constant	1.434	0.186	—	7.708	<.001	—
Internal Factors	0.621	0.046	.758	13.484	<.001	1.000

Source: Created by the author based on survey results. Note. DV = SBM_Implementation. $R = .758$, $R^2 = .574$, Adjusted $R^2 = .571$, $F(1, 135) = 181.821$, $p < .001$. VIF = 1.000 confirms that SBM implementation largely depends on internal factors.

Internal factors are strong and highly important predictors of SBM implementation at $\beta = .758$, $B = .621$, $SE = .046$, $t = 13.484$, $p < .001$. This means that for every one unit increase in the internal factors composite score, SBM implementation increases by 0.621 units. This finding proves H1 statement that internal factors positively influence SBM implementation. It can be stated categorically that internal factors and SBM implementation complement each other. To be specific with this statement, it is proven that leadership commitment, strong organizational culture, employee engagement, and resource availability drive SBM implementation. The finding can be reconciled with the various authors quoted in the literature review and empirical studies. Example Barney. (1991), on resource-based view theory. In his literature, internal organizational capabilities are the major source of sustainable competitive advantage. Other literature and empirical studies on leadership commitment are: (Mignon & Bankel,

2022; Baldassarre et al., 2020; Bocken & Geradts, 2020; Stubbs & Cocklin, 2008; Boons & Lüdeke-Freund, 2013). H1 supports the arguments raised by these authors that effective SBM implementation requires deep internal systemic transformation rather than outward adoption of sustainable practices. H1 strongly supports the literature and empirical findings presented earlier.

Hypothesis 2: External factors positively influence SBM implementation

H2 was similarly tested within the same parameters as the internal factors, with external factors as the independent variable and SBM implementation as the dependent variable. The model was statistically significant at $F(1, 135) = 92.767$, $p < .001$, with external factors explaining 40.7% of the variance in SBM implementation at $R^2 = .407$, Adjusted $R^2 = .403$. Table 15 is the summary of the regression model result.

Table 15

Simple linear regression: external factors positively influence SBM implementation (H2)						
Predictor	B	Std. Error	β	t	Sig.	VIF
Constant	1.643	0.237	—	6.942	<.001	—
External Factors	0.580	0.060	.638	9.632	<.001	1.000

Source: Created by the author in accordance with survey results. Note. DV = SBM_Implementation. $R = .638$, $R^2 = .407$, Adjusted $R^2 = .403$, $F(1, 135) = 92.767$, $p < .001$. VIF = 1.000 confirms no multicollinearity

External factors were also a strong and relevant predictor of SBM implementation at $\beta = .638$, $B = .580$, $SE = .060$, $t = 9.632$, $p < .001$. This was the test result obtained from the simple linear regression, showing that for every one unit increase in external factors, SBM Implementation increases by 0.580 units. We explain the variance in SBM implementation at $R^2 = .407$, which shows a lower predictive value compared to internal factors as a sole predictor. The findings also confirm a strong positive relationship between external factors and SBM implementation. H2 finding is in synch with Stakeholder theory by Freeman, Phillips, and Sisodia (2020), regulatory support and market incentive as critical enablers of the circular economy by MacArthur Foundation (2015), and external institutional conditions create the enabling context within which SBMs can be effectively implemented by Schaltegger, Hansen, & Lüdeke-Freund, (2015). H2 is therefore supported.

Hypotheses 1 and 2: internal factors and external factors positively influence SBM implementation

In assessing the effect of both internal and external factors on SBM implementation, a step further to run multiple linear regression was taken. This will help to explain the joint implications of internal and external factors for SBM implementation. In this model, both factors were entered simultaneously

to ascertain their joint power on SBM implementation. Tables 16 and 17 present a summary of the joint hypotheses for 1 and 2

Table 16

Multiple linear regression- coefficient (H1 & H2)

Predictor	B	Std. Error	β	t	Sig.	VIF
Constant	1.209	0.205	—	5.900	<.001	—
Internal Factors (H1)	0.508	0.065	.619	7.778	<.001	2.079
External Factors (H2)	0.175	0.072	.192	2.414	.017	2.079

Source: Created by the author in accordance with survey results. Note. DV = SBM_Implementation. $R = .769$, $R^2 = .592$, Adjusted $R^2 = .586$, $F(2, 134) = 97.077$, $p < .001$. VIF values of 2.079 confirm the absence of multicollinearity.

Table 17

Multiple linear regression- internal and external factors positively influence SBM implementation (H1 & H2 Combined model)

Hypothesis	Predictor	B	Std. Error	β	t	Sig.	VIF
H1	Internal Factors only	.758	.574	.571	181.821	1, 135	<.001
H2	External Factors only	.638	.407	.403	92.767	1, 135	<.001
H1+H2	Internal + External Factors	.769	.592	.586	97.077	2, 134	<.001

Source: Created by the author in accordance with survey results. Note. DV = SBM_Implementation for all models. R^2 Change from H1-only (.574) to combined model (.592) = .018, indicating a slight incremental contribution of External Factors when Internal Factors are controlled.

Tables 16 and 17 present the combined effect of internal and external factors on the implementation of SBM. The simultaneous application of internal and external factors still presents internal factors as the dominant determinant of SBM implementation at $\beta = .619$, $p < .001$. External factors continue to be significant at $\beta = .192$, $p = .017$, reducing their effect when compared to a stand-alone regression at $\beta = .638$. The combined model explains 59.2% of the variance in SBM Implementation ($R^2 = .592$). This slightly exceeds the Internal Factors model alone ($R^2 = .574$). This incremental improvement, whilst modest, confirms that External Factors contribute more explanatory

variance beyond Internal Factors. The comparison across models reveals an important finding: Internal Factors alone account for 57.4% of variance in SBM Implementation, substantially more than External Factors alone (40.7%). This suggests that while external pressures are meaningful drivers of implementation, the internal environment is the major factor in how effectively sustainable business models are implemented and ingrained in the organization. This confirms Bocken et al. (2014) literature that embedding sustainability most deeply into their core internal systems achieves superior implementation results.

H3: Barriers influence the relationship between SBM implementation and implementation effectiveness in international companies.

Multiple linear regression was run, holding SBM effectiveness as the dependent variable and keeping both SBM implementation and barriers as independent variables. This was run to test hypothesis 3. The model tested for the extent to which barriers and SBM implementation together affect SBM effectiveness. The model was highly significant ($F(2, 134) = 142.454$, $p < .001$, $R^2 = .680$, Adjusted $R^2 = .675$). Table 18 presents the regression coefficients.

Table 18

Multiple linear regression- barriers and SBM implementation influence SBM effectiveness (H3)

Predictor	B	Std. Error	β	t	Sig.	VIF
Constant	0.384	0.205	—	1.869	.064	—
SBM Implementation	0.786	0.053	.776	14.744	<.001	1.160
Barriers (H3)	0.097	0.045	.113	2.153	.033	1.160

Source: Created by the author in accordance with survey results. Note. DV = SBM Effectiveness. $R = .825$, $R^2 = .680$, Adjusted $R^2 = .675$, $F(2, 134) = 142.454$, $p < .001$. VIF = 1.160 for both predictors; no multicollinearity concerns.

SBM Implementation is still the main predictor of SBM Effectiveness at $\beta = .776$, $B = .786$, $SE = .053$, $t = 14.744$, $p < .001$). The model confirms the major role of implementation quality in determining sustainable implementation effectiveness. Barriers show a statistically significant positive effect on SBM Effectiveness at $\beta = .113$, $B = .097$, $SE = .045$, $t = 2.153$, $p = .033$ t. The addition of Barriers to SBM Implementation increased explained variance to 68.0% compared to 66.9% with SBM Implementation alone. This result provides a statistically meaningful improvement in SBM effectiveness. The positive impact of the barrier coefficient is an important shift from the norm that requires a careful theoretical explanation. Conventionally, barriers are expected to negatively affect implementation and its effectiveness; however, barriers show a higher effective score when combined with implementation. This

finding works best with the Dynamic Capabilities Theory, which emphasizes that organizations must not only possess resources but also have the capability to adapt and renew these resources to sustain competitive advantage over time (Teece, 2007). This theory simply implies that businesses that actively engage in SBM implementation are those that encounter and intentionally control these challenges that show up when implementing. Active confrontation of barriers may itself reflect a deeper level of sustainability commitment that works together at the same time to achieve effectiveness, and organisations that lead sustainable business model innovation usually face greater institutional and operational resistance than less engaged counterparts. Hence, greater ambition generates greater friction (Schaltegger et al. 2015). This finding also aligns with the Circular Economy literature (Ellen MacArthur Foundation, 2015), where organisations pursuing the deepest CE transitions report more complex systemic barriers, but they achieve the strongest sustainability effectiveness alongside. H3 is therefore supported: barriers influence SBM effectiveness not negatively but positively, propelling businesses to innovate and scale those barriers.

Hypothesis 4: The strength and nature of the international company are major influences on SBM implementation effectiveness.

Company size and industry as moderating influences: A complementary approach was used to test H4. A two-block hierarchical multiple regression to assess the incremental explanatory contribution of company size and industry beyond internal and external factors, and one-way ANOVAs comparing mean SBM effectiveness scores across industry sector and company size groups. Before we continue with this test, it was earlier established from our cross-tabulation in Figure 3 that Finance and business services companies are the largest organizations, with 50% of large companies and 63% of very large companies, compared to only 18.8% of micro companies.

Table 19

Hierarchical regression model summary for the moderating effect of company size and industry (H4)

Model	Predictors	R	R ²	Adj. R ²	ΔR^2	F Change	Sig. F Change
1	Internal + External Factors	.785	.615	.610	.615	107.241	<.001
2	+ Company Industry + Size	.793	.628	.617	.013	2.295	.105

Source: Created by the author in accordance with survey results Note. DV = SBM_Effectiveness. Block 1: Internal_Factors + External_Factors. Block 2: adds Company Industry (Q4) + Company Size (Q5). A significant ΔR^2 with $p < .05$ would indicate meaningful additional explanatory power.

Table 19 shows that Block 1, with its components as Internal and External Factors, produced a noticeable and powerful model ($R^2 = .615$, $F \text{ Change} = 107.241$, $p < .001$). The addition of Company Industry and Company Size in Block 2 produced a marginal increase in explained variance ($\Delta R^2 = .013$), bringing total R^2 to .628. Critically, this incremental change was not statistically significant ($F \text{ Change} = 2.295$, $p = .105$). This shows that company size and industry sector do not add meaningful explanatory power beyond internal and external factors in predicting SBM effectiveness.

Table 20

One-way ANOVA for SBM effectiveness by industry sector and company size (H4)

Grouping Variable	F	df	p	η^2	Verdict
Company Industry (Q4)	1.363	6, 130	.234	.059	Not Significant
Company Size (Q5)	2.187	4, 132	.074	.062	Not Significant (borderline)

Source: Created by the author in accordance with survey results. Note. η^2 = Eta-squared effect size. Levene's tests confirmed homogeneity of variances (Industry: $F = .703$, $p = .648$; Size: $F = 1.183$, $p = .321$). No pairwise comparisons reached significance (Tukey HSD, $p > .05$ for all pairs).

The one-way ANOVA results support the hierarchical regression findings and the cross-tabulation findings. No statistically significant differences in SBM Effectiveness were observed across industry sectors ($F(6, 130) = 1.363$, $p = .234$, $\eta^2 = .059$) or company size categories ($F(4, 132) = 2.187$, $p = .074$, $\eta^2 = .062$). While the size ANOVA approached borderline significance ($p = .074$), Tukey post hoc tests confirmed that no specific pairwise comparisons between size groups reached statistical significance. A descriptive trend was noted with Very Large companies ($M = 4.012$, $SD = .715$) recording marginally higher effectiveness than Micro businesses ($M = 3.486$, $SD = .864$). This finding agrees with RBV theory predictions about resource advantages of larger businesses (Barney, 1991). This trend will have to be investigated further with a larger sample size in future research using a larger sample size to establish the validity of this finding.

These findings do not support H4. The nature and size of international companies do not emerge as major determinants of SBM effectiveness in this study. This challenges assumptions in parts of the SBM literature that larger or sector-specific businesses go beyond benefiting from inherent structural advantages in SBM implementation. The findings rather support the assumption that SBM effectiveness drivers are universal. Elkington (1997) posits that TBL applies to all businesses regardless of scale, and SBM principles go beyond sectoral and organisational boundaries (Bocken et al., 2014). The joint findings of cross-tabulation, hierarchical regression, and ANOVA support the TBL theory and other

authors in the literature in theoretical and analytical chapters, which highlight that TBL is universal to all businesses irrespective of size or sector, making this hypothesis testing credible even though it is not supported. H4 is therefore not supported.

Hypotheses 5: H5. SBM implementation mediates the relationship between internal and external factors and SBM effectiveness.

H5 is a build-up test on the regression findings in H1 and H2. It assesses whether SMB implementation can act as a mediator through which internal and external factors influence SBM effectiveness. H5 was tested using Baron and Kenny's widely used four-step mediation approach. Table 21 shows the four prerequisite conditions for mediation.

Table 21

Summary of Baron and Kenny's four-step mediation analysis				
Step	Relationship Tested	Key Statistics	Outcome	Verdict
1	IV → DV (without mediator)	Internal: $\beta=.585$, $p<.001$; External: $\beta=.250$, $p=.002$; $R^2=.615$	Both IVs significant	✓ Met
2	IV → Mediator (SBM Implementation)	Internal: $\beta=.619$, $p<.001$; External: $\beta=.192$, $p=.017$; $R^2=.592$	Both IVs significant	✓ Met
3	Mediator → DV (alone)	SBM Implementation: $\beta=.818$, $B=.829$, $p<.001$; $R^2=.669$	Mediator significant	✓ Met
4	IV + Mediator → DV (altogether)	Internal: $\beta=.259$, $p=.001$; External: $\beta=.149$, $p=.027$; Mediator: $\beta=.527$, $p<.001$; $R^2=.729$	IVs remain significant; β values reduced	✓ Partial Mediation

Source: Created by the author according to survey results. Note. DV = SBM_Effectiveness. Mediator (M) = SBM_Implementation. Steps follow Baron and Kenny's criteria: Steps 1–3 must be significant to proceed; Step 4 determines the type of mediation based on the change in IV significance and magnitude.

Step 1 confirmed that both internal factors ($\beta = .585$, $p < .001$) and external factors ($\beta = .250$, $p < .001$) significantly predicted SBM Effectiveness in the absence of the mediator ($R^2 = .615$, $F(2, 134) = 107.241$, $p < .001$) — the prerequisite IV-DV relationship required to proceed with mediation testing. Step 2 confirmed that both internal factors ($\beta = .619$, $p < .001$) and external factors ($\beta = .192$, $p = .017$) significantly influence the proposed mediator SBM Implementation ($R^2 = .592$, $F(2, 134) = 97.077$, $p < .001$), establishing the IV-mediator relationship. Step 3 confirmed that SBM Implementation alone was a strong and significant predictor of SBM Effectiveness ($\beta = .818$, $B = .829$, $SE = .050$, $t = 16.520$, $p < .001$, $R^2 = .669$), establishing the mediator-outcome relationship. All three necessary conditions were thus met, justified, and now moving on to Step 4.

In Step 4, Internal Factors, External Factors, and SBM Implementation were entered simultaneously into the regression model. The overall model was highly significant ($F(3, 133) = 119.209$, $p < .001$, $R^2 = .729$, Adjusted $R^2 = .723$), explaining 72.9% of variance in SBM Effectiveness. This is an

improvement of 11.4 percentage points over the model without the mediator. Table 22 presents the critical beta coefficient comparison across Steps 1 and 4, which determines the type of mediation.

Table 22

Beta coefficient comparison- before and after introducing the SBM implementation as a mediator

Predictor	β — Step 1 (without mediator)	β — Step 4 (with mediator)	Change in β	Type of Mediation
Internal Factors	$\beta = .585, p < .001$	$\beta = .259, p = .001$	↓ .326	Partial Mediation ✓
External Factors	$\beta = .250, p = .002$	$\beta = .149, p = .027$	↓ .101	Partial Mediation ✓
SBM Implementation	—	$\beta = .527, p < .001$	—	Strong Mediator ✓

Source: Created by the author according to survey results. Note. Step 1 β values from regression without mediator ($R^2 = .615$). Step 4 β values from regression with mediator included ($R^2 = .729$). Partial mediation is confirmed when IV beta values reduce but remain statistically significant after the mediator is added (Baron & Kenny, 1986). VIF values in Step 4: Internal Factors = 3.018; External Factors = 2.169; SBM Implementation = 2.449; all below the critical threshold of 5.

Table 22 shows that the beta coefficient for Internal Factors dropped considerably from .585 in Step 1 to .259 in Step 4, a reduction of .326 — representing a 55.7% reduction. The beta for External Factors also dropped from .250 to .149, a reduction of .101 — a 40.4% reduction. Critically, both Internal Factors ($\beta = .259, p = .001$) and External Factors ($\beta = .149, p = .027$) remained statistically relevant after controlling for SBM Implementation, while SBM Implementation itself was a strong important predictor ($\beta = .527, p < .001$). This pattern — meaningful reduction in IV betas, with both IVs and the mediator remaining significant — constitutes partial mediation according to Baron and Kenny's (1986) criteria.

The partial mediation finding shows how SBM effectiveness is achieved, and this supports various theories in earlier chapters. It shows that internal and external factors influence SBM effectiveness through two simultaneous pathways: an indirect pathway, where factors drive implementation quality and eventually drive effectiveness; and a direct pathway, in which factors independently influence effectiveness beyond their effect on implementation. The indirect pathway talks about the important way of SBM transformation, thus, the conversion of enabling conditions into embedded organisational practice. The direct pathway suggests that factors also directly shape sustainability culture, stakeholder relationships, and strategic positioning in ways that produce effective outcomes independently of formal implementation activities. This dual-pathway structure is supported by the statement “that implementation depth serves as a critical but partial mechanism through which enabling conditions are converted into sustainability performance” (Geissdoerfer et al., 2020) and “SBM

standards, which most deeply embed sustainability into their operational and strategic systems, achieve superior outcomes” (Bocken et al., 2014). This means implementation activities alone cannot produce effectiveness, but through the holistic transformation of institutional purpose. The partial mediation finding supports the Circular Economy literature and C2C theories, which highlight the policy framework in implementation (Ellen MacArthur Foundation, 2015; McDonough & Braungart, 2002). Both authors imply that the effectiveness of SBM implementation happens when strategic intent is aligned with SBM implementation by putting both internal and external factors in context. H5 is therefore supported as a partial mediation.

Based on the test results from various hypotheses and the literature verifications, it is established that internal factors and external factors influence SBM implementation in international companies. SBM implementation becomes more effective when organizations spot and utilize the opportunities those barriers present. The TBL is a universal tool for all companies, irrespective of size or sector. SBM implementation mediates the relationship between internal and external factors to produce SBM effectiveness. Table 23 shows a summary of hypotheses and their results.

Table 23

Summary of hypotheses test results

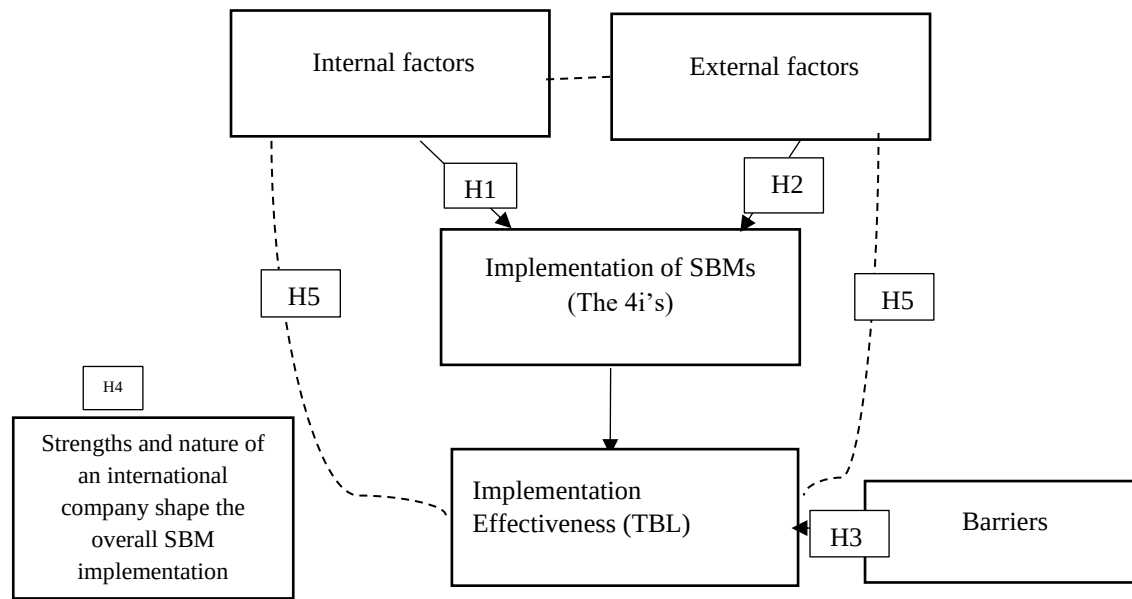
H	Hypothesis	Key Statistic	Verdict
H1	Internal factors positively influence SBM implementation	$\beta = .758$ (separate); $\beta = .619$ (combined); $p < .001$; $R^2 = .574$	✓ Supported
H2	External factors positively influence SBM implementation	$\beta = .638$ (separate); $\beta = .192$ (combined); $p < .001$; $R^2 = .407$	✓ Supported
H3	Barriers significantly influence SBM implementation effectiveness	$\beta = .113$, $p = .033$; $R^2 = .680$ (with SBM Implementation)	✓ Supported
H4	The company's nature/strength influences SBM effectiveness	$\Delta R^2 = .013$, $p = .105$; ANOVA: Industry $p = .234$; Size $p = .074$	✗ Not Supported
H5	SBM Implementation mediates IV/EV → SBM Effectiveness	β : Internal $.585 \rightarrow .259$; External $.250 \rightarrow .149$; Mediator $\beta = .527$, $p < .001$	✓ Partial Mediation

Source: created by the author.

Note. All tests were conducted at an alpha = .05 significance level. DV = SBM Effectiveness (Q15, Cronbach's alpha = .916). N = 137.

Table 23 summarizes and shows that out of the five hypotheses tested, one came out as an exception. All other 4 hypotheses were supported. H1 and H2 confirm that internal and external factors are strong independent variables that drive the implementation of SBMs. Internal factors were statistically proven to be the strongest predictor. A combined regression model also confirms that both factors are jointly influential on the implementation of SBM; however, internal factors remain stronger and more relevant. H3 confirms that barriers are influential on SBM effectiveness, but this time around, it showed a positive influence instead of a negative influence. This trend was explained by the application of dynamic capabilities and giving meaning to how organizations engage with implementation challenges to achieve better outcomes. H4 was not supported by various levels of tests; however, it proved that SBM effectiveness can be achieved by all companies, irrespective of company size or sector. H5 results show a partial mediation finding (R^2 improved from .615 to .729), identifying SBM implementation quality as a critical but partial mediating mechanism, revealing dual direct and indirect pathways from enabling factors to effectiveness outcomes.

It can be concluded that all results discussed in the findings had theoretical explanations with famous authors such as Elkington (1997, 2018), Freeman et.al. (2020), Bocken et. al. (2014), and most of the authors in the theoretical and analytical chapters on SBM concepts, definitions, and implementation. The partial mediation in H5 also provided reasons for theoretical and empirical research models. It also identified implementation quality as an important aspect where organizational capabilities and external factors are used to achieve implementation effectiveness. Figure 5 is the empirically validated model for the implementation of SMBs in international companies.



Source: Created by the author based on the findings of the empirically tested results of the survey in conjunction with theoretical and analytical findings.

Figure 5. Empirically Tested Research Model for the implementation of SBM in international companies

The new empirically tested research model presented in Figure 5 is a comprehensive one based on the empirical findings of this research, together with theories and practical applications found in the empirical research in parts 1 and 2. The model shows the relationship between internal factors, external factors, barriers, company characteristics, SBM implementation, and SBM effectiveness. This is connected to Hypotheses 1 to 5. The model takes its roots from the TBL concept, stakeholder theory, RBV, BMI, C2C, Circular economy, Doughnut economy, and Dynamic capabilities theories. These were the main authors of the summarized concepts presented in Table 2 at the beginning of this research.

A top-to-bottom description of the model shows the four main factors that contribute to the implementation of SBM in international companies and its effectiveness. On the extreme top left is internal factors (H1), which include, but are not limited to, leadership commitment, strong organizational culture, employee engagement, and availability of resources. This factor emerged as the strongest primary driver at 57.4% to SBM implementation when tested alone. It was also combined with external factors to see the level of influence, and it emerged as the highest at 76.3%, while external factors contributed only 23.7% uniquely. Their shared overlap is 38.9%, which shows that they are highly intercorrelated at $R=.654$. The unique contribution of internal factors cannot be overemphasized, as it had a strong direct effect at 20.3% and indirectly alone at 57.4%.

On the extreme top right of the model are external factors comprising government regulation, customer demand, competitive pressure, and technology and digitization. These factors were empirically tested at H2, drawing from the literature review and empirical studies in the preceding parts. It was accomplished that external factors contribute 40.7% all alone as a strong secondary driver and uniquely 59.2% when tested with internal factors holding SBM implementation as the dependent variable. This implies that it has a joint dominant effect on the model. Both internal and external factors together explain 61.5% of SBM implementation effectiveness. This drives home the fact from theories and empirical studies that the majority of how effectively SBM is implemented across economic, environmental, and social dimensions is dependent on internal and external factors at 61.5%. The model is explained on the basis of social science standards, where R^2 values exceed 50% are considered excellent (Hair et al., 2019). The 38.5% unexplained factors could be assigned to factors beyond this model. For example, geographical factors, technology innovation trends, and cycle and supply chain trends. When barriers were added, the percentage increased by 6.5% to reach 68.0%, addition of barriers was also explained in H3 as a strong driver of SBM effectiveness.

Company Size and sector were added to the baseline model to test for H4, and it came out as non-significant, adding only 1.3% explanatory power to the effectiveness of the model. This result also has a theoretical grounding that TBL is a universal model for all companies, irrespective of size and business sector.

A step further in this survey made a full mediation model (H5). This model emerged as the strongest of all. It incorporated internal factors, external factors, and SBM implementation at the same time, based on the recommended model by Baron & Kenny (1986). The model had the highest explanatory power of 72.9%, which represents an 11.4% improvement over the baseline model without the mediator. The 11.4% increase was the single largest percentage point improvement over the baseline model without the mediator. This was the highest increment in this whole analysis conducted. The result at this last stage of the analysis shows that SBM Implementation is not only an outcome of enabling factors. SBM implementation proved in this model as a strong independent contributor to SBM effectiveness. It actually accounts for an estimated 41.2% of total variance in effectiveness outcomes. The best explanation offered by the researcher is that in every 100 percentage points of variance in how SBM effectiveness is perceived in all three dimensions, namely, economic, environmental, and social performance, almost 73% of it is explained by SMB implementation. The 27.1% unexplained variance reflects factors beyond the scope of this study.

Summarizing this aspect, the empirical research was conducted to investigate the factors that influence the implementation of SBMs and SBM effectiveness in international companies. A Pollmill

questionnaire survey was used to collect quantitative data for this research. The survey sample used for data analysis was 137 out of 600 questionnaires sent through digital platforms. The questionnaire was organized by the use of a 5-point Likert scale. Research data was analyzed by the use of descriptive statistics, regression, correlation coefficient, multiple regression, and cross-tabulations. Cronbach's reliability assessment was made to establish the reliability of Likert scale items. At various levels of the data analysis, hypotheses were tested. The third sub-aspect of this aspect of the thesis presented the results and evaluation of the research findings.

It was identified that internal factors and external factors contribute to the implementation and effectiveness of SBMs in international companies. Hypotheses I and 2 each tested for the contribution of individual variables as independent variables for the implementation of SBM and subsequently tested together to identify their combined effect. It was statistically proven that internal factors were the major contributors to SMB implementation in international companies, accounting for 57.4% of the total variance for SBM implementation when tested alone and 76.3% when it was combined with external factors. Their shared overlap is 38.9%, which shows that they are highly intercorrelated at $R=.654$. The unique contribution of internal factors cannot be overemphasized, as it had a strong direct effect at 20.3% and indirectly alone at 57.4%. This is a buildup on the theoretical foundations presented in the first aspect of this study, such as the TBL, Resource-based view, BMI, circular economy, C2C, and all the major concepts of SBM.

External factors were also identified as contributing to the implementation and effectiveness of SBM in international companies in similar ways. External factors contributed 40.7% in H2 when it was tested alone and a unique contribution of 14%, explaining 23.7% of the joint model. This means that, out of every 100% points of SBM implementation change that can be explained, about 45 points are uniquely attributed to internal factors, 14 points to external factors and the remaining 41 points are either shared between both factors without further explanation. These individual and unique results of internal and external factors are even higher when it comes to SBM implementation effectiveness. Internal and external factors jointly contribute 61.5% of the variance in SBM effectiveness. In this comprehensive model, barriers were added and an additional 6.5% percentage points were achieved to reach 68.0%. Barriers even improve upon the baseline percentage. This supports the theory in dynamic capabilities as explained in sub-part 3.3 of this thesis.

Company size and industry added to the model only contributed 1.3%, which is not significant in this case. Hence, H4 was not supported. In the final model, H5 was tested through a full mediation by combining internal factors, external factors, and SBM implementation at the same time as independent variables. Voila! This gave the best results at 72.9%. It is statistically proven that all theories that

highlight the comprehensive approach of SBM implementation for the achievement of its effectiveness are enriched by these findings. The universal application of the triple bottom line as a foundational SBM theory was also proven by H4, which showed that SBM implementation and effectiveness can be achieved by all companies irrespective of their size and or industry sector. Even though H4 was not supported, it enriched the theory of the triple bottom line. This also feeds into the Sustainable Development Goals by emphasizing the economic, environmental, and social performance of all businesses to make the world a better place for both current and future generations.

CONCLUSIONS

1. Concluding this research work on the implementation of sustainable business models in international companies, the researcher aimed to investigate how SBMs should be implemented in international companies in Lithuania and Ghana. This was motivated by the aim of investigating the factors determining the implementation of sustainable business models. The theoretical framework was explored, and concepts, theories, and empirical research by various authors were synthesized and analyzed at various stages. A theoretical model was provided based on the literature used in the first part, and a research model was deduced in the second part of the study based on the empirical level of research by various authors. In the third part, hypotheses were tested to confirm the literature as well as the analytical aspects.
2. Concepts of sustainable business models were summarized, and it was clear in the literature that sustainable business models are implemented by businesses to rethink how a company creates, delivers, and captures value in ways that are economically viable, socially responsible, and environmentally sound at the same time. It is evident in the literature that the linear business model has outlived its usefulness, where businesses only think of economic viability, ignoring the effect of their actions on the environment and the well-being of humans.
3. Secondly, strategies and key drivers associated with the implementation of SBM in international companies were examined. This identified how international companies approach SBM implementation in practice, and the various levels of research concluded on. The findings show that implementation is not a one-size-fits-all. It is shaped by a combination of internal factors, such as leadership commitment, organizational culture, and available resources, as one aspect, and external factors, including government regulation, customer expectations, technological trends, and competition. The hypotheses tested confirmed the literature that internal factors are more influential than external factors. Top management support and the embedding of sustainability into organizational culture were among the strongest-scoring items. This shows that the effective implementation of SBM starts from within the organization, and the buck stops with decision makers in the organization. The theory of dynamic capabilities is well explained in this finding that businesses become proactive in addressing issues, rather than becoming reactive. Therefore, sustainable business models should be embedded in the core strategy of every business to detect trends, invest in sustainable products, and reorganize operations and supplier networks. This also confirms the business model innovation concept.
4. A model for the implementation of sustainable business models was created based on the hypotheses, results, and the literature. The regression findings provide a strong empirical basis for the model. Data

analysis of survey results showed that internal and external factors do not operate in isolation, as these factors complement each other, and their combined effect flows through the quality of implementation itself to determine the effectiveness of the model. SBM implementation itself is the critical bridge between having the right conditions and actually achieving meaningful sustainability outcomes. This confirms various authors' literature and empirical research. Implementation explained the majority of the variance in SBM effectiveness.

5. To address the investigation on the links between internal and external factors and SBM effectiveness, a further ranking hypothesis was tested, and the results surprisingly gave meaning to the findings in the literature about the pair. Internal factors emerged as the single strongest predictor of SBM implementation. When companies have supportive leadership, a culture oriented toward sustainability, and sufficient internal expertise and resources, they are more likely to implement SBMs effectively. This was the most consistently supported finding of the study, and it carries an important message to all managers and business owners that the foundation of effective SBM implementation is built inside the organization first.

6. External factors such as regulatory pressure, customer demand, and competition also proved very important. Companies do not operate without interacting with their environment, and the external environment clearly motivates and shapes SBM implementation. However, when considered alongside internal factors, the independent influence of external forces was somewhat reduced, suggesting that external pressures matter most when they find a receptive internal environment.

7. Barriers to implementation, such as high costs, lack of expertise, resistance to change, and supply chain limitations, were found to influence SBM effectiveness even after accounting for the quality of implementation itself. This is an important finding. It confirms some authors' theoretical and empirical findings that barriers do not slow down the process of implementing SBM. It was confirmed that addressing barriers is necessary to achieve the SBM effectiveness that companies want to achieve.

Recommendations

Leadership role in the implementation of SBM is the major factor that sets the tone for implementation and its effectiveness. Internal factors, and particularly the role of top management, are the strongest predictors of SBM implementation effectiveness. Companies that want to effectively implement SBM should begin with the genuine conviction of those at the top. When leadership models sustainable thinking and owns it, it is cascaded through all other employees, which makes it the organization's culture. This will make all the efforts translate into action. The 4i model proposed in the theoretical model and in the final empirically tested model is the way to implement SBMs in international companies.

Leadership should treat implementation as its own strategic priority. One of the lessons from this study is that good intentions and positive environments are not enough on their own. Implementation is the means through which sustainability potential becomes sustainability reality. Companies should invest deliberately in building implementation capacity through good governance structures, measurable milestones, dedicated resources, and accountability at all levels of the organization. Sustainability should appear not just in strategy documents but in performance reviews, procurement decisions, and day-to-day operational choices.

Leadership must address barriers proactively. High implementation costs, resistance to change, and supply chain issues were identified in the literature as barriers to effectiveness. Companies should conduct honest internal audits of where these barriers exist and develop targeted plans to address them before or during implementation, rather than treating them as problems to solve as and when they arise. They must also build internal capability and recognize that the size of their company is not a barrier to the implementation of SBM. As long as there is a will, there is a way.

Policymakers should support capacity building and policy interventions that help companies build genuine sustainability capability, which will be more impactful than those focused purely on compliance requirements. Grants, subsidized training, knowledge-sharing platforms, and industry-wide sustainability networks can all help companies, especially smaller companies to overcome the expertise and resource barriers identified in this study.

For future research

Based on the empirical findings of this study, future research could usefully explore how SBM implementation processes differ across specific industry contexts. It is recommended to examine the mediation pathway more closely, specifically, what aspects of implementation quality most strongly carry the influence of internal and external factors through to the effectiveness of SBM implementation. Finally, qualitative research to study the lived experience of implementation within organizations could help the quantitative findings considerably, giving voice to the human dimensions of organizational change that statistical models, by their nature, can only partially capture.

S A N T R A U K A

Temos aktualumas. Dėl kelių esminių pasaulinių iššūkių susikirtimo, kintančios rinkos dinamikos ir vis didesnio verslo atsakomybės už socialinį, aplinkosauginį ir ekonominį tvarumą pripažinimo, tvarių verslo modelių (SBM) diegimas tampa vis svarbesne tema moksliniams tyrimams, akademinėi bendruomenei ir šiuolaikiniam pasauliui. TVV yra nukreipti į ekonominių, aplinkosaugos ir socialinių problemų, kurias sukelia verslas, sprendimą, siekiant padėti išsaugoti planetą dabartinei ir ateities kartoms. Tai yra raktas į inovacijas įmonėse. Taisyti padėtį tampa vis svarbiau, nes perėjimas nuo tradicinės verslo veiklos prie skaidresnio ir atsakingesnio verslo vykdymo būdo kelia didelį susirūpinimą visiems. Visame pasaulyje skamba raginimas visoms įmonėms įgyvendinti tvarius verslo modelius savo veikloje, kad jų veiksmai ar neveikimas nesukeltų neigiamų išorinių padarinių gyvenimui ir aplinkai. Todėl įmonėms būtina įdiegti tvarius verslo modelius, kad būtų pasiekti tvaraus vystymosi tikslai.

Darbo objektas – tvarių verslo modelių diegimas tarptautinėse įmonėse.

Darbo tikslas – ištirti tvarių verslo modelių diegimą tarptautinėse įmonėse lemiančius veiksnius.

Darbo uždaviniai:

1. Apibendrinti tvarių verslo modelių sąvokas.
2. Išnagrinėti strategijas ir pagrindinius veiksnius, susijusius su TVM diegimu tarptautinėse įmonėse.
3. Susisteminti tyrimus apie tvarių verslo modelių diegimą tarptautinėse įmonėse.
4. Sukurti tvarių verslo modelių diegimo tarptautinėse įmonėse modelį.
5. Išnagrinėti vidinių ir išorinių veiksnių, lemiančių tvarių verslo modelių diegimo veiksmingumą tarptautinėse įmonėse, sąsajas.

Remiantis šio tyrimo empiriniais rezultatais, kartu su 1 ir 2 skyriuose pateiktomis teorijomis ir praktiniais pavyzdžiais, modelis parodo ryšį tarp vidinių veiksnių, išorinių veiksnių, kliūčių, įmonių charakteristikų, TVM įgyvendinimo ir TVM veiksmingumo. Tai susiję su 1–5 hipotezėmis. Šis modelis grindžiamas „trigubo rezultato“ koncepcija, suinteresuotųjų šalių teorija, išteklių pagrįstu požiūriu, verslo modelių inovacijomis, „nuo lopšio iki lopšio“ principu, žiedine ekonomika, „spurgos“ ekonomika ir dinamiškų gebėjimų teorijomis.

Tyrimo struktūra ir apimtis. Magistro darbas susideda iš įvado, 3 dalių ir išvadų. Darbo apimtis 77 puslapiai. Darbe pateikti 5 paveikslai ir 23 lentelės. Literatūros sąrašą sudaro 137 šaltiniai.

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Questionnaire

Dear Respondent,

Rejoice Denteh prepared this questionnaire to provide a database for academic research on the subject “Implementation of sustainable business models in international companies” within the scope of Vilnius University, Kaunas Faculty, *International Business Management* master’s study program. This survey aims to investigate how sustainable business models should be implemented in international companies. The information provided will be used purely for scientific purposes, and it is not necessary to specify a name in the survey. The survey consists of three parts as follows: General Information, Implementation Practices in terms of internal and external factors, barriers, as well as how these barriers are defeated by the dynamic capabilities of an international company. Sincerity is a requirement for the answers to questions in this survey, and each respondent has to answer all questions without skipping any questions to help achieve scientific validity and reliability of the research. Thank you for taking the time off your busy schedule to complete this questionnaire.

Consent

1. Do you consent to participate?

- ☐ Yes
- ☐ No

Respondent Profile

2. What is your role in the company?

- ☐ Top management
- ☐ Middle Management
- ☐ Operational staff
- ☐ Sustainability/CSR specialist
- ☐ Other specify.....

3. How many years of professional experience do you have?

- ☐ Less than 2 years
- ☐ 2–5 years
- ☐ 6–10 years

- ☐ More than 10 years

Company Profile

4. Company industry:

- ☐ Industrial (Manufacturing & Construction)
- ☐ Transport & Logistics
- ☐ Finance & Business Services
- ☐ Public & Social Services
- ☐ Technology & Other Services
- ☐ Other specify.....

5. Company size:

- ☐ Micro (1–9)
- ☐ Small (10–49)
- ☐ Medium (50–249)
- ☐ Large (250–999)
- ☐ Very Large (1000+)

6. Company coverage:

- ☐ Global
- ☐ Multinational
- ☐ International
- ☐ Local
- ☐ Other specify

Awareness:

7. How familiar are you with sustainable business models?

- ☐ Not familiar
- ☐ Somewhat familiar
- ☐ Very familiar

8. Does your company have a formal sustainability policy?

- ☐ Yes
- ☐ No

Internal factors:

On a scale of 1-5 where 1 = Strongly disagree and 5 = Strongly agree, answer the questions
For subsequent statements, please indicate your level of agreement using the scale below:

1 2 3 4 5
 Strongly Disagree Disagree Neutral Agree Strongly Agree

No	9. Answer on a scale of 1-5 the level of agreement to the influence of internal factors on SBMs implementation	Scale: 1=strongly disagree to 5=strongly agree				
1	Top management supports sustainability initiatives	1	2	3	4	5
2	Sustainability is embedded in organizational culture					
3	Employees are encouraged to adopt sustainable practices					
4	The company has sufficient resources and expertise					
	10. Assess the external influence on the implementation of Sustainable business models on a scale of 1-5 where 1 is strongly disagree and 5 is strongly agree.					
1	Government regulations influence sustainability adoption	1	2	3	4	5
2	Customer demand drives sustainability practices					
3	Competitive pressure encourages sustainability					
4	Technology and digitization drive sustainable practices					
	11. On a scale of 1-5, describe how severe each barrier is to the implementation of Sustainable business models in your organization	Scale: 1=Negligible/ Trivial barrier to 5=Absolute/ Unsurmountable barrier				
1	High implementation costs hinder sustainability	1	2	3	4	5
2	Lack of expertise					
3	Resistance to change					
4	Supply chain limitations					

Strategies

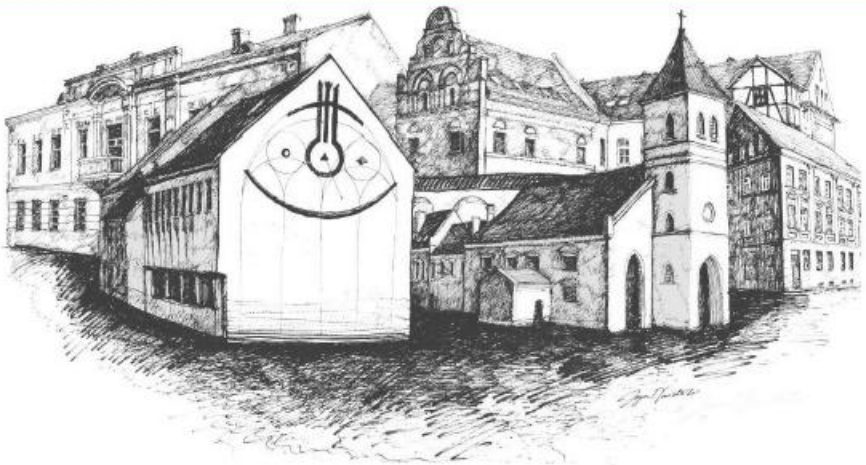
12. Which strategies has your company used to mitigate barriers? (Multiple choice)

- ☐ Training programs
- ☐ External Partnerships
- ☐ Technology adoption
- ☐ Process redesign
- ☐ Policy changes

- ☐ ESG integration

No	13. On a scale of 1-5, give your response on the effectiveness of strategies	Scale: 1=strongly disagree to 5=strongly agree				
1	Our strategies effectively address sustainability barriers	1	2	3	4	5
2	Our company adapts quickly to sustainability challenges					
	Implementation					
	14. On a scale of 1-5, indicate your level of agreement on how sustainable business models are implemented	Scale: 1=strongly disagree to 5=strongly agree				
1	Sustainability is integrated into the core business strategy	1	2	3	4	5
2	Sustainability influences key business decisions					
3	Sustainability performance is actively measured					
4	Sustainable practices are actively implemented					
	Question 15. Assess the evidence of the overall effectiveness of implementing sustainable business models.					
	Economic Performance	1	2	3	4	5
1	Sustainability initiatives improved cost efficiency					
2	Sustainability increased revenue or market share					
3	Sustainability strengthened competitive advantage					
	Environmental Performance	1	2	3	4	5
4	Our environmental impact has decreased					
5	Resource efficiency (energy, materials) has improved					
6	Waste and emissions have been reduced					
	Social Performance	1	2	3	4	5
7	Customer satisfaction has improved					
8	Employee engagement has increased					
9	Our company contributes positively to society					

Certificate of conference authorization



KAUNAS FACULTY
OF VILNIUS UNIVERSITY

CERTIFICATE

8 May 2026 No. VUKnF-2026-17-51

awarded to

Rejoice Denteh
Vilnius University, Lithuania

for the presentation

**The factors contributing to the implementation of
sustainable business models in international companies**
(co-author Ilona Kiaušienė)

presented at the 20th Prof Vlasdas Gronskas International Scientific Conference
held at the Kaunas Faculty of Vilnius University on the 8th of May, 2026.

Dean



Assoc. Prof. Dr Giedrius Romeika

Spearman's rank correlations

Variable	Correlation	1	2	3	4	5	6
1. Internal Factors	Correlation Coefficient	-					
	Sig. (2-tailed)						
2. External Factors	Correlation Coefficient	.654***	—				
	Sig. (2-tailed)	<.001					
3. Barriers	Correlation Coefficient	.163	.240**	—			
	Sig. (2-tailed)	.057	.005				
4. Sustainability Strategy Effectiveness	Correlation Coefficient	.719***	.705***	.219*	—		
	Sig. (2-tailed)	<.001	<.001	.010			
5. SBM Implementation	Correlation Coefficient	.718***	.680***	.268**	.780***	—	
	Sig. (2-tailed)	<.001	<.001	.002	<.001		
6. SBM Effectiveness	Correlation Coefficient	.700***	.670***	.270**	.711***	.734***	—
	Sig. (2-tailed)	<.001	<.001	.001	<.001	<.001	
	N	137	137	137	137	137	137

Source: Created by the author based on survey results. Note. *** Correlation is significant at the 0.001 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). Barriers → Internal Factors ($r = .163$, $p = .057$) are not significant.