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THE RELATIONSHIP BETWEEN INTERNATIONALIZATION AND CIRCULAR ECONOMY PRACTICES: A STUDY OF THEIR INTERACTION

Leonardo Mori
Javier Carrillo-Hermosilla
Christoph Kiefer

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ABSTRACT

This thesis investigates the role of internationalization in fostering circular economy (CE) practices within companies, employing a qualitative research design through desk research. By analyzing publicly available information from three international corporations, the study explores how international market dynamics influence the adoption of CE practices.

The research framework integrates the Natural-Resource-Based View (NRBV) to assess internal resources, competences, and dynamic capabilities, and Institutional Theory to understand external pressures shaping CE adoption. The comparative analysis identifies key drivers, barriers, best practices, similarities, differences, and common challenges companies face when embedding CE principles into their operations.

Findings suggest that internationalization acts as both a catalyst and a challenge for CE implementation. It pushes companies to innovate internally while responding to varied external pressures across markets. International exposure can encourage CE adoption by introducing firms to diverse regulatory and market requirements. However, it also presents obstacles such as regulatory complexity, supply chain difficulties, and the need to balance global strategies with local adaptations.

This study offers insights into the strategic alignment between sustainability and international business, providing valuable lessons for companies seeking to strengthen their sustainable practices globally. It also underscores the importance of managing the tensions and complexities that internationalization introduces in the context of CE.

Key words: Circular Economy, Internationalization, Sustainability, Natural-Resource-Based View (NRBV), Institutional Theory, Multinational Corporations

RESUMEN

Esta tesis investiga el papel de la internacionalización en el fomento de las prácticas de economía circular (EC) dentro de las empresas, utilizando un diseño de investigación cualitativo basado en análisis documental (desk research). A través del análisis de información pública disponible de tres corporaciones internacionales, el estudio explora cómo las dinámicas del mercado internacional influyen en la adopción de prácticas de EC.

El marco teórico de la investigación integra la perspectiva basada en los recursos naturales (Natural-Resource-Based View, NRBV) para evaluar los recursos internos, las competencias y

las capacidades dinámicas, y la Teoría Institucional para comprender las presiones externas que configuran la adopción de la EC. El análisis comparativo identifica los principales impulsores, barreras, buenas prácticas, similitudes, diferencias y desafíos comunes que enfrentan las empresas al incorporar los principios de la EC en sus operaciones.

Los resultados sugieren que la internacionalización actúa tanto como catalizador como desafío para la implementación de la EC. Obliga a las empresas a innovar internamente mientras responden a diversas presiones externas en diferentes mercados. La exposición internacional puede fomentar la adopción de la EC al introducir a las empresas en entornos regulatorios y de mercado diversos. Sin embargo, también presenta obstáculos como la complejidad normativa, las dificultades en la cadena de suministro y la necesidad de equilibrar estrategias globales con adaptaciones locales.

Este estudio ofrece una visión estratégica sobre la alineación entre sostenibilidad y negocios internacionales, proporcionando lecciones valiosas para las empresas que buscan fortalecer sus prácticas sostenibles a nivel global. Asimismo, subraya la importancia de gestionar las tensiones y complejidades que la internacionalización introduce en el contexto de la economía circular.

Palabras clave:

Economía Circular, Internacionalización, Sostenibilidad, Enfoque Basado en los Recursos Naturales (NRBV), Teoría Institucional, Corporaciones Multinacionales

AUTORÍA

LEONARDO MORI. Universidad de Alcalá (UAH).

JAVIER CARRILLO-HERMOSILLA. PhD. Professor, Department of Economics and Business, University of Alcalá.

CHRISTOPH KIEFER. Instituto de Bienes y Políticas Públicos (IPP) - Consejo Superior de Investigaciones Científicas (CSIC).

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Introduction

The global business landscape has increasingly recognized the necessity of sustainable practices, primarily driven by environmental concerns, regulatory requirements, and market dynamics. One of the key paradigms gaining traction in this context is the circular economy (CE), which is an economic model that contrasts with the traditional linear "take, make, dispose" system. It emphasizes resource efficiency by keeping materials in use for as long as possible through out different strategies. CE promotes a closed-loop system where waste is minimized, and products and materials are regenerated, thus reducing the environmental impact. It focuses on creating restorative and regenerative processes, aiming to decouple economic growth from resource consumption and environmental degradation. This approach has gained prominence due to its potential to address global challenges such as resource scarcity, pollution, and climate change, and it has been adopted by various organizations worldwide. (Reike, Vermeulen, & Witjes, 2018; Murray, Skene, & Haynes, 2017; Ellen MacArthur Foundation, 2019).

Reike, Vermeulen & Witjes (2018) conducted an in-depth literature review on the operationalization of the Circular Economy (CE), with a particular focus on the "R-imperatives". The "R-imperatives" in the Circular Economy are structured in a hierarchical manner, referred to as the "R-ladder," which assigns different strategies different levels of importance based on their ability to preserve the value of resources and reduce environmental harm. The hierarchical structure prioritizes the most efficient actions to achieve circularity and sustainability, with the goal of preserving the maximum value of resources throughout multiple product life cycles (see Table 1).

Table 1: The "R-Imperatives" Hierarchical Structure

	R-Imperative	Description
0	Refuse	Avoid using hazardous materials or virgin materials to prevent waste.
1	Reduce	Eliminate waste production by using less material per unit and dematerialization in design.
2	Resell/Re-Use	Second-hand use of products with minimal changes.
3	Repair	Extend product lifespan by restoring it to working order after minor defects.
4	Refurbish	Maintain product structure while upgrading with new components.
5	Remanufacture	Disassemble, inspect, clean, and replace parts to remanufacture product.
6	Repurpose	Reuse discarded goods or components for new functions.
7	Recycle Materials	Avoid newly mined materials, using recycled ones of lower value.
8	Recover (energy)	Capture energy from waste through incineration or biomass.
9	Re-mine	Retrieve materials from landfills.

Source: Reike, Vermeulen, & Witjes, 2018

As businesses seek to balance profitability with sustainability, the adoption of CE practices has become imperative. These practices not only improve environmental performance, but also provide financial benefits through waste reduction, increased resource efficiency, and product differentiation. (Genovese, Acquaye, Figueroa, & Koh, 2017; Su, Heshmati, Geng, & Yu, 2013) Companies often discover novel market possibilities and cost efficiencies while innovating to fulfill environmental requirements, which allows them to turn compliance with regulations into an edge over their competitors. (Carrillo-Hermosilla, del Río, & Könnölä, 2009; Chabowski, Mena, & Gonzalez-Padron, 2011; Del Río, Kiefer, Carrillo-Hermosilla, & Könnölä, 2021).

Internationalization, defined as the expansion of a company's operations beyond its domestic borders (Welch,, & Luostarinen, 1988), plays a crucial role in this shift towards sustainability (Moreira, Galvão, Braga, Braga, & Teixeira, 2023). For international corporations, internationalization not only opens new markets and opportunities for growth, but also exposes them to diverse regulatory frameworks, consumer expectations, and competitive pressures that can drive the adoption of CE practices (Bohnsack, Ciulli, & Kolk, 2021; Šūmakaris, Ščeulovs, & Korsakienė, 2020; Zhu, Sarkis, & Lai, 2007) These pressures often necessitate significant adaptation of business models to align with local sustainability standards and regulatory requirements. For instance, in some countries, stringent environmental regulations and strong consumer demand for sustainable products may compel firms to innovate more aggressively in resource efficiency and waste reduction. This adaptation is not just a compliance issue but a strategic opportunity to gain competitive advantage in markets where consumers increasingly value sustainability. Moreover, the transition to CE practices can vary widely depending on the economic development, cultural values, and institutional structures of both the home and host countries, requiring firms to carefully balance global standardization with local responsiveness. By successfully navigating these complex and dynamic environments, international corporations can enhance their global competitiveness, build stronger relationships with stakeholders, and contribute to broader environmental and social goals. (Chabowski, Gabrielsson, Hult, & Morgeson, 2023).

This thesis explores how the internationalization of companies contributes to the adoption of CE practices. By focusing on three industry-leading international corporations Philips (Electronics), Unilever (Consumer goods) and IKEA (Furniture and home furnishings), this research seeks to understand the mechanisms through which international expansion influences CE practices. The study employs a qualitative research design through desk research, leveraging publicly available information to conduct a comprehensive analysis.

The theoretical framework guiding this research combines the Natural-Resource-Based View (NRBV) and Institutional Theory.

Circular Economy (CE) principles align closely with the Natural-Resource-Based View (NRBV), as both emphasize sustainable resource management and the efficient use of

internal capabilities to address environmental challenges. The NRBV focuses on the internal capabilities and resources that companies can leverage to implement sustainable practices (Hart, 1995; Hart & Dowell, 2011). The NRBV extends the traditional Resource-Based View (RBV), which is a prominent theoretical framework in strategic management that stresses the internal factors of a firm as the primary source of its long-term competitive advantage. The RBV theory, which was introduced by Penrose in 1959, signals a significant shift from the examination of a firm's industry to the examination of the firm's internal decisions and competencies (Hart & Dowell, 2011). Notable figures in the development of the Resource-Based View (RBV) theory are Barney (1991) and Montgomery & Wernerfelt (1988). These authors highlighted the importance of firm-specific resources and capabilities in attaining a competitive advantage.

Resources are the assets that a corporation possesses, while capabilities refer to the organization's capacity to effectively utilize these resources. Capabilities are developed through routines and practices that the firm performs, leveraging its resources to achieve strategic objectives. On the other hand, dynamic capabilities, as Teece, Pisano, & Shuen (1997) have described, refer to the abilities of a firm to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. They allow firms to renew their resource base and adapt to environmental shifts. These dynamic capabilities are essential for firms that operate in turbulent marketplaces, as they enable them to adjust and succeed. Dynamic capabilities thus expand the traditional understanding of resource management by emphasizing the continuous adaptation of resources and capabilities to achieve a sustainable competitive advantage in a rapidly evolving environment.

In contrast, the Institutional Theory examines the external pressures, such as regulatory requirements and market expectations, that compel companies adopt specific structures, practices, and behaviors in order to gain legitimacy, ensure compliance, and enhance their competitive advantage within their industry. (DiMaggio & Powell, 1983; Powell & DiMaggio, 2004).

Through this dual lens, this research aims to provide a holistic understanding of the internal drivers and barriers, as well as the external pressure and influence, associated with CE adoption in an international context.

The primary objective of this thesis is to investigate the role of internationalization in promoting circular economy practices within companies. To achieve this, the study sets out the following specific objectives:

1. Examine Internal Capabilities and Resources:

    • Utilize the Natural-Resource-Based View (NRBV) to identify and analyze the internal factors that enable and hinder companies to adopt and implement sustainable practices (Hart, 1995; Hart & Dowell, 2011).

    • Assess how internationalization influences the development and deployment of capabilities within international corporations.

2. Analyze External Pressures and Influences:

    • Apply Institutional Theory to understand the external pressures, including regulatory, market, and consumer expectations, that drive companies towards CE practices (DiMaggio & Powell, 1983; Powell & DiMaggio, 2004).

    • Evaluate the impact of international regulatory frameworks and social expectations on the sustainability strategies of international corporations.

3. Identify Best Practices and Common Challenges:

    • Conduct a comparative analysis of the CE practices of Philips, Unilever and IKEA to identify best practices, similarities, and differences in their approaches.

    • Highlight the common barriers and challenges for companies to implement CE practices into their operations.

4. Provide Strategic Insights:

    • Offer practical insights and recommendations for companies seeking to enhance their sustainable practices through internationalization.

The thesis begins with a detailed methodology section that outlines the qualitative research design and data collection methods utilized to analyze the adoption of circular economy (CE) practices within three multinational corporations. Following the

methodology, the introduction sets the stage by discussing the importance of sustainable practices in the global business landscape and defines key concepts such as circular economy and internationalization. The theoretical background is then explored, where the Natural-Resource-Based View (NRBV) and Institutional Theory frame the internal and external factors influencing CE adoption. An extensive field study examines specific CE practices and strategies at Philips, Unilever, and IKEA, providing a comparative analysis of their approaches. The discussion section contextualizes the findings within the theoretical frameworks, highlighting similarities and differences among the corporations and identifying common challenges and best practices. The thesis concludes with a comprehensive summary of the findings, offering strategic insights and recommendations for companies looking to enhance their sustainable practices through internationalization, and discusses the limitations of the study.

1. Methodology

1.1. Research design

This thesis utilizes a qualitative research approach, which is especially appropriate for examining intricate phenomena like the correlation between internationalization and the implementation of circular economy (CE) practices. Van Maanen (1979) asserts that qualitative approaches provide comprehensive, descriptive insights into organizational processes, effectively capturing the subtleties of decision-making and human behavior that quantitative methods often overlook. Qualitative methodologies facilitate the examination of context-specific organizational dynamics, especially in domains like sustainability and internationalization, where standardized metrics may inadequately capture the intricacies of actual practices. The use of multiple case studies allows for the development of both theoretical and practical insights derived from real-world examples, particularly when research (Eisenhardt & Graebner, 2007). Case studies are especially effective at uncovering detailed aspects of organizational innovations that may not be evident through large-scale quantitative approaches. Moreover, analyzing multiple cases improves the robustness of findings, increasing their applicability and supporting broader generalizations (Cook & Campbell, 1976; Patton, 1990).

Specifically, this study used desk research centered on publicly accessible information from three international corporations Philips, Unilever, and IKEA to provide a

comprehensive analysis of the impact of internationalization on circular economy practices.

1.2. Case selection

The selection of Philips, Unilever, and IKEA as case studies is based on their established reputations as leaders in both international business operations and sustainability initiatives. These companies have been widely recognized for their efforts to integrate CE principles into their operations, making them ideal subjects for this research. Additionally, their diverse industry backgrounds spanning electronics, consumer goods, and furniture provide a broad perspective on how different sectors approach CE practices in the context of internationalization.

1.3. Data collection

This research utilizes publicly available data from Philips, Unilever, and IKEA. A variety of secondary sources were analyzed to provide a comprehensive view of the internal and external factors driving CE implementation across these industries. The collection of data used in this research has been based on the following sources:

1. Sustainability Reports and Annual Reports: These documents provide extensive details regarding the internationalization efforts and progress of each company in achieving circular economy objectives.

2. Corporate Websites: Information was also gathered from the official websites of the selected companies, which feature sections that emphasize sustainability and internationalization, offering a detailed perspective of their strategies and accomplishments.

3. Industry Publications and News Articles: Context and updates on the companies' internationalization efforts and CE activities were also derived from relevant articles in industry publications and news media.

4. Academic Journals and Research Papers: Additionally, the research leveraged prior studies and academic papers to gain deeper insights into the companies' internationalization and CE strategies.

1.4. Data analysis

The data analysis process follows a systematic approach, integrating both NRBV and Institutional Theory to examine the internal and external factors influencing CE adoption. The analysis involves several key steps:

1. Identification of Circular Economy Practices:

Gathering data on the particular projects and practices related to the circular economy that are being implemented by each company, including aspects such as product design, resource efficiency, recycling, and waste management.

2. Analysis of Internal Factors:

Applying the framework of NRBV to determine the internal capabilities and resources that support the implementation of CE (Circular Economy) practices. This entails evaluating investments in research and development, the organizational culture, and strategic goals.

3. Analysis of External Factors:

Using Institutional Theory to evaluate the external pressures that impact the adoption of CE. This involves analyzing regulatory requirements, market demands, and societal expectations in the international contexts where these companies operate.

4. Comparative Analysis:

Comparing the findings across the three companies to identify commonalities, differences, and best practices. This step helps to highlight the various ways in which internationalization impacts CE practices across different sectors.

2. Theoretical background

2.1. Theoretical framework

As explained above, the theoretical framework guiding this research combines the Natural-Resource-Based View (NRBV) and Institutional Theory.

The NRBV, as articulated by Hart (1995), provides a crucial perspective for understanding the internal factors and capabilities that enable companies to adopt CE practices.

On the other hand, Institutional Theory (DiMaggio & Powell, 1983; Powell & DiMaggio, 2004) offers valuable insights into how internationalization subjects companies to various external pressures, which in turn drive the adoption of Circular Economy (CE) practices.

2.2. Natural-Resource-Based View (NRBV)

The RBV theory examines the firm's internal decisions and competencies (Hart & Dowell, 2011). The theory highlights the importance of firm-specific resources and capabilities in attaining a competitive advantage. Barney (1991) states that resources must satisfy four criteria in order to be considered valuable they must possess value, rarity, inimitability, and non-substitutability (VRIN criteria):

- Valuable: Resources are essential for a firm to successfully implement strategies that enhance its efficiency and effectiveness.
- Rare: Resources must be limited in quantity compared to the level of demand.
- Inimitable: Resources should possess characteristics that make them challenging for competitors to imitate or replicate.
- Non-Substitutable: There should be no comparable resources that can be utilized to accomplish the same strategy.

The resources in the RBV framework are classified into three main types:

- Physical Resources: Refer to tangible assets.
- Human Resources: The collective skills, knowledge, and expertise possessed by the employees of the company.
- Organizational Resources: Refer to intangible assets.

Capabilities are cultivated through the firm's routines and practices, enabling it to effectively utilize its resources to meet strategic goals. In contrast, dynamic capabilities, as explained by Teece, Pisano, & Shuen (1997), involve a firm's capacity to integrate,

develop, and reconfigure both internal and external competencies to adapt to swiftly changing environments. This last concept emphasizes a firm's capacity to adapt to new opportunities or threats, innovate, and renew its resource base to maintain a competitive advantage, particularly in volatile and unpredictable markets.

The Natural-Resource-Based View (NRBV) of the firm, first proposed by Hart (1995), provides a comprehensive framework that enhances the (RBV) theory. This approach explains how firms can achieve sustainable competitive advantage through the effective management of natural resources.

The NRBV extends the traditional Resource-Based View (RBV) by incorporating the environmental aspects into strategic management, emphasizing the importance of ecological sustainability in the development of firm capabilities. Hart (1995) argued that the traditional RBV had a critical omission: it overlooked the relationship between firms and their natural environment. Given the increasing environmental challenges and the need for sustainable development, Hart proposed the NRBV to address this gap.

Hart (1995) identified three interconnected strategic capabilities that form the core of the NRBV: pollution prevention, product stewardship, and sustainable development. Each of these capabilities is driven by different environmental forces, builds on different key resources, and offers distinct sources of competitive advantage. In a comprehensive review of the NRBV, Hart & Dowell (2011) revisited the original framework, summarizing the progress made and incorporating significant developments that had emerged since its inception.

1. Pollution Prevention

This approach focuses on reducing waste and emissions at the source, which minimizes environmental impact and decreases input requirements. It streamlines processes, lowers compliance and liability costs, and ultimately leads to substantial financial savings and improved operational effectiveness. Hart (1995) contended that pollution prevention has the dual benefit. These claims have been substantiated by empirical studies, which have shown a direct correlation between pollution prevention efforts and financial performance.

Researchers have been able to conduct studies by utilizing data from sources such as the U.S. Environmental Protection Agency's Toxic Release Inventory. These studies

have demonstrated that organizations that establish pollution prevention capabilities exhibit superior financial performance. Research has indicated that the expectations and cognitive perspective of managers have a notable impact on their capacity to recognize and capitalize on opportunities for pollution prevention (King & Lenox, 2002).To achieve success in pollution prevention, certain key resources are vital. Continuous improvement capabilities, total quality environmental management (TQEM), innovation in processes, and waste reduction techniques form the foundation of effective pollution prevention efforts. These resources not only help firms enhance operational efficiency but also ensure long-term sustainability by minimizing environmental harm and driving profitability (Hart & Dowell, 2011).

2. Product Stewardship

Product stewardship extends the scope of pollution prevention to the entire lifecycle of a product, including the design, production, usage, and disposal stages. It emphasizes integrating stakeholder feedback to ensure that environmental considerations are embedded from the beginning (Hart, 1995). Sharma & Vredenburg (1998) discovered that organizations implementing product stewardship strategies exhibited improved stakeholder integration capabilities, particularly in the oil industry, demonstrating greater effectiveness in managing energy conservation programs and reducing waste.

Moreover, the connection between Circular Economy (CE) and product stewardship becomes evident through the concept of closed-loop recycling, which plays a pivotal role in fostering sustainable practices within industries like automotive, shipping, and aircraft manufacturing (Jensen & Remmen, 2017). Product stewardship contributes to CE by ensuring that the materials and components of products are designed for reuse, remanufacturing, or recycling, aligning with CE principles that aim to minimize waste and extend the lifecycle of resources (Jensen & Remmen, 2017).

Studies have shown that the successful implementation of product stewardship programs requires collaboration across various organizational divisions. Peattie, Wright, & Pujari (2003) found that cross-functional coordination and senior management support are crucial to ensuring that product development integrates environmental and circular practices effectively. The enterprise information systems (EIS) mentioned in Jensen and Remmen's research are key enablers of this integration, supporting life cycle

management and facilitating data sharing across the product value chain, which is crucial for optimizing recycling and reuse processes.

These insights demonstrate that product stewardship, when connected with Circular Economy practices, can provide a competitive advantage. By fostering collaboration, integrating lifecycle management tools, and using information systems to improve resource efficiency, firms can enhance their market standing and operational efficiency while meeting environmental objectives (Hart & Dowell, 2011).

3. Sustainable Development

The objective of sustainable development strategies is to produce a net positive impact on society and the environment, with a particular focus on long-term sustainability rather than financial short-term benefits. The circular economy directly tackles modern challenges such as increasing resource demands, population growth, evolving consumption patterns, and raw material price volatility. By fostering improved environmental performance and socioeconomic prosperity, it provides a comprehensive framework for achieving sustainable development (Kirchherr, Reike, & Hekkert,., 2017). This approach includes advancing environmentally friendly capabilities and tackling societal issues like poverty and resource scarcity. Hart (1997) emphasized the importance of clean technology and Base of the Pyramid (BoP) strategies as crucial components of sustainable development.

Clean technology strategies encompass innovative approaches and future-oriented planning, with the goal of minimizing material and energy usage while meeting human needs. Hart (1997) emphasized the importance of firms cultivating dynamic capabilities to safeguard and foster disruptive clean technologies.

The Bottom of the Pyramid (BoP) strategy is centered around meeting the requirements of the most impoverished populations worldwide, by developing business models that are inclusive and generate both economic and social advantages. Hart & Dowell (2011) conducted research that suggests that companies that implement proactive environmental strategies are more likely to engage in BoP initiatives as a result of competitive and institutional pressures. This strategy requires companies to collaborate with BoP communities to jointly develop solutions, ensuring that the business models are both sustainable and advantageous for all parties involved To support these strategies, certain key resources are essential. Innovation in clean technologies,

capabilities for entering and developing new markets, and strategies for addressing social issues such as poverty and resource scarcity form the backbone of sustainable development efforts. These resources enable firms to build resilient, future-oriented business models that generate lasting positive impacts (Hart & Dowell, 2011).

Firms can achieve long-term growth and sustainability by pioneering new markets and by investing in disruptive technologies that reduce resource consumption and environmental impact (Hart, 1997; Prahalad & Hart, 2002).

The Natural-Resource-Based View (NRBV) provides a strategic foundation that firms can leverage to implement Circular Economy (CE) principles through the development of internal capabilities and resources. Central to this alignment is product stewardship, which plays a critical role in advancing CE by extending pollution prevention efforts across the entire product lifecycle. This comprehensive approach involves considering environmental impacts at every stage. By embedding stakeholder feedback into the product development process, companies can ensure that environmental considerations are integrated from the outset, promoting both sustainability and resource efficiency. Pollution prevention, another NRBV capability, further complements CE by minimizing waste and resource consumption during production processes, thus reducing the need for virgin materials. Meanwhile, sustainable development within the NRBV fosters innovation in clean technologies and motivates firms to address global challenges (Hart & Dowell, 2011). By leveraging these capabilities, firms can not only reduce their environmental footprint but also create closed-loop systems that regenerate resources, positioning themselves competitively within a circular economy.

The Natural-Resource-Based View (NRBV) framework significantly benefits from integrating with the concept of dynamic capabilities, which enhance a firm's ability to adapt and thrive in rapidly changing environments. Due to the influence of their existing structures, strategies, and resources, two firms facing similar external environments may develop similar capabilities, although not identical ones (Aragon-Correa & Sharma, 2003; Eisenhardt & Martin, 2000). The NRBV enhances the development of dynamic capabilities by highlighting the specific environmental and social challenges that firms need to address: Fringe Stakeholder Engagement: Engaging with non-traditional stakeholders[1], such as environmental groups and local communities, can provide firms

[1] Traditional stakeholder: Value chain stakeholder

with new insights and opportunities for innovation. This engagement can lead to the development of dynamic capabilities that are responsive to environmental and social needs (Hart & Sharma, 2004).

Clean technology commercialization entails the development and commercialization of clean technologies, necessitating firms to build capabilities that manage uncertainty and dynamic complexity effectively. This process is underpinned by eco-innovation, which plays a critical role in the advancement of environmentally friendly technologies. The Natural-Resource-Based View (NRBV) provides a framework that highlights the necessity for a solid base of resources and competencies, which are crucial for fostering such eco-innovations. Furthermore, in the context of Base of the Pyramid (BoP) strategies, the NRBV underscores the importance of embedded innovation and co-creation with BoP communities. These strategies are pivotal for developing dynamic capabilities that adapt to the needs and challenges of these communities. According to Peattie, Wright, & Pujari, (2003), effective environmental new product development significantly relies on cross-functional coordination within the firm, requiring robust support from top management and seamless integration across various functions such as R&D, marketing, and operations. This level of internal collaboration is a key dynamic capability, enabling firms not only to innovate but also to responsively adapt their resource and competence bases to meet environmental challenges effectively (Hart & Sharma, 2004). The ability to dynamically adjust these resources and competencies is essential for the successful commercialization of clean technologies and the implementation of BoP strategies, reflecting the evolving nature of markets and environmental expectations.

The way managers frame environmental issues plays a crucial role in shaping the firm's ability to adopt proactive environmental strategies. According to King & Lenox (2002), managers who view environmental concerns as opportunities rather than threats are more likely to invest in pollution prevention measures. This proactive framing represents a key dynamic capability that significantly impacts the firm's strategic approach to environmental challenges, as highlighted by Hart & Sharma (2004). Similarly, adapting to technological uncertainty, particularly in the commercialization of clean technologies, requires companies to navigate unpredictable territories. Hart (1997) argues that firms with robust R&D capabilities and a forward-looking approach are better positioned to

invest in and safeguard disruptive clean technologies, which can provide a long-term competitive advantage.

In order to achieve Clean Technology Commercialization companies must incorporate inventive methods into their business operations. Eco-innovations, or EI, enable companies to efficiently address environmental and social challenges. Eco-innovation is a crucial concept that plays an essential part in advancing sustainable economies and societies. It pertains to innovations that particularly aim to minimize the environmental damage resulting from manufacturing and consumption operations or to create positive ecological outcomes. While eco-innovation often aims to integrate environmental considerations into business processes, there is broad consensus in the literature that the environmental improvement achieved by such innovations does not always need to be intentional. Instead, these improvements may emerge as a by-product of innovations driven by other objectives, such as cost reduction or efficiency gains. This broader perspective underscores the dual potential of eco-innovations to align environmental and economic goals, reducing the traditional conflict between competitiveness and sustainability. By incorporating ecological benefits, whether intentional or not, eco-innovations frequently enhance "sustainability performance" and contribute to aligning business operations with ecological stewardship (Carrillo-Hermosilla, Del Río, & Könnölä, 2010).

Eco-innovation is influenced not only by technical factors but also by regulatory frameworks and the proactive involvement of stakeholders. According to the “Porter Hypothesis” (Porter, & Van der Linde, 1995), stringent environmental regulation could force polluting firms to seek innovations to reduce the cost of compliance and production, improving the firm’s competitiveness and leading to a positive relationship between environmental and economic performance. The hypothesis challenges the conventional view that environmental regulations are a burden on businesses, suggesting instead that they can actually enhance competitiveness.

The Innovation Offset Hypothesis (strong version) argues that well-designed environmental regulations can spark innovations that may not only offset but even surpass the costs of compliance. These innovations, termed "innovation offsets," can reduce overall expenses associated with regulatory compliance and potentially give firms a competitive advantage over international competitors who are not subject to

similar regulations. In this view, environmental regulations can act as a catalyst for innovation, leading to improvements in productivity and competitiveness.

The Dynamic Competitiveness Hypothesis (weak version) proposes that the traditional trade-off between environmental protection and competitiveness is outdated. In the modern global economy, competitiveness is dynamic and deeply intertwined with innovation. Companies that consistently innovate are more likely to enhance their competitiveness, even under stringent environmental regulations. Moreover, according to the OECD (2012), companies are motivated to adopt sustainable practices due to regulatory pressures and incentives.

Nevertheless, the active involvement of stakeholders, including customers and suppliers, is vital for the effective implementation and widespread acceptance of eco-innovations. Stakeholder engagement is crucial as eco-innovations frequently require modifications across the entire value chain. Suppliers may be required to comply with updated environmental regulations, offer environmentally friendly materials, or create technologies that support sustainability objectives. Customers play a crucial role by simultaneously demanding environmentally friendly products, which motivates companies to innovate and implement eco-efficient practices (Rennings, 2000).

2.3. Institutional theory

Institutional Theory, as developed by DiMaggio & Powell (1983 and 2004), provides a lens through which we can understand how external pressures and institutional forces shape organizational behavior. Institutional Theory posits that organizations within the same field tend to become increasingly similar over time through a process known as institutional isomorphism. DiMaggio & Powell identify three main mechanisms driving this isomorphism: coercive, mimetic, and normative.

1. Coercive Isomorphism

Coercive isomorphism arises from formal and informal pressures exerted on organizations by other entities and societal expectations. These pressures often stem from regulatory requirements, legal mandates, and cultural expectations. Organizations comply with these pressures to gain legitimacy and ensure survival. For multinational corporations, these coercive forces are particularly significant as they operate across

multiple regulatory environments and must adhere to various national and international laws (DiMaggio, & Powell, 1983).

2. Mimetic Isomorphism

Mimetic isomorphism occurs when organizations model themselves after other organizations perceived as successful, especially under conditions of uncertainty. This mechanism helps organizations reduce uncertainty by imitating practices that appear to be effective for others. In the context of multinational corporations, mimetic behavior is driven by the need to stay competitive and legitimate in the eyes of stakeholders (DiMaggio, & Powell, 1983).

3. Normative Isomorphism

Normative isomorphism stems from professionalization and the influence of norms established through educational and professional networks. This mechanism results in the homogenization of organizational practices as companies adhere to industry standards and professional norms (DiMaggio, & Powell, 1983).

Application to Circular Economy Practices

Institutional Theory provides a robust framework for understanding how external pressures influence the adoption of circular economy (CE) practices within multinational corporations. Organizations are not only influenced by their internal capabilities and resources but are also shaped significantly by the external environment in which they operate. These external pressures can stem from regulatory frameworks, normative expectations, and cognitive-cultural influences that collectively shape organizational behavior and practices (DiMaggio & Powell, 1983).

First of all, regulatory pressures refer to the formal rules and regulations imposed by governments and other authoritative bodies. These regulations mandate specific practices that organizations must comply with to operate legally and avoid penalties (Torrecillas & Fernández, 2022). Companies operating in multiple countries face a complex landscape of regulatory environments, necessitating adaptive strategies to meet diverse legal standards. In the context of CE, regulatory pressures include environmental laws, waste management regulations, and sustainability reporting requirements (Zhu, Sarkis, & Lai, 2007; Barrie & Schröder, 2022). Based on the design and implementation of policies, regulatory pressures can serve as both a catalyst and a

hindrance to the adoption of circular economy practices. A supportive environment that encourages companies to adopt CE practices can be achieved through the implementation of a well-designed policy mix that encompasses regulatory frameworks, fiscal measures, and educational initiatives. Conversely, the uniform implementation of CE practices within regions may be impeded by the existence of numerous levels of government (supranational, national, regional) and the consequent conflicts and policy inconsistencies. Companies may be motivated to implement more sustainable practices by policies that establish incentives or mandate the use of recycled content in products. These measures have the potential to foster innovation in product design and establish markets for recycled materials. Conversely, if incentives and requirements are inadequately supported by efficient markets or transparent procedures, they may serve as a source of uncertainty or supplementary expense for businesses, potentially discouraging their implementation of CE practices. (Del Río, Kiefer, & Carrillo-Hermosilla, 2023)

Secondly, cultural pressures, stemming from shared societal beliefs and values, also influence organizational behavior, particularly in strategic decisions related to CE. As society increasingly recognizes the importance of sustainability, consumer demand for eco-friendly products grows, compelling organizations to integrate CE practices into their business models to align with societal values and consumer expectations(Chabowski,, Gabrielsson, Hult, & Morgeson, 2023; Bressanelli, Visintin, & Saccani, 2022; Pichlak & Szromek, 2022)

Finally, normative pressures arise from the expectations set by industry norms, professional bodies, and stakeholder groups. These pressures drive organizations to adopt practices deemed appropriate and legitimate by peers and stakeholders. For multinational companies, these pressures include expectations for corporate social responsibility, sustainability certifications, and adherence to CE best practices. Such expectations are crucial for advancing Circular Economy (CE) practices by aligning companies with recognized environmental standards and encouraging resource efficiency, waste minimization, and recycling initiatives. Normative pressures motivate companies to integrate CE principles, enhancing their sustainability and competitive edge while meeting shared environmental goals. (Bressanelli, Visintin, & Saccani, 2022; Pichlak & Szromek, 2022; Barrie & Schröder, 2022).

2.4. Integrating NRBV and institutional theory: a unique perspective

Integrating the ideas from the Natural-Resource-Based View (NRBV) framework and Institutional Theory is crucial for fully understanding the impact of internationalization on the adoption of circular economy (CE) practices. The NRBV highlights the internal capabilities and resources that firms can use to achieve sustainability, focusing on firm-specific strategies and innovations (Hart, 1995; Hart & Dowell, 2011). Due to differences in structures, strategies, and resources, two firms operating in similar external environments may develop comparable but distinct capabilities (Aragon-Correa & Sharma, 2003; Eisenhardt & Martin, 2000). Meanwhile, Institutional Theory focuses on external pressures that drive companies to align with industry standards, societal expectations, and regulations, leading to institutional isomorphism, where organizations in the same field become increasingly similar over time (DiMaggio & Powell, 1983; Powell & DiMaggio, 2004)

This thesis develops a holistic framework that combines both perspectives, offering a comprehensive understanding of the internal and external factors that influence CE adoption. The NRBV shows how firms can use their unique resources to gain competitive advantages by fostering dynamic capabilities, which are essential for innovating and implementing CE practices (see Figure 1). Institutional Theory underscores the role of coercive, mimetic, and normative pressures that push firms to adopt CE practices to comply with regulations, cultural expectations, and industry norms (see Figure 2).

By integrating the NRBV and Institutional Theory, this framework provides a thorough analysis of how multinational corporations navigate the complex sustainability landscape. Internal drivers from the NRBV, such as resource efficiency and innovation (Hart & Dowell, 2011), align with external pressures, like regulatory and societal demands (Bohnsack, Ciulli, & Kolk, 2021; Šūmakaris, Ščeulovs, & Korsakienė, 2020; Zhu, Sarkis, & Lai, 2007), to shape how firms adopt CE practices. Achieving strategic alignment between internal resources and external pressures enables companies to effectively leverage their capabilities to meet regulatory requirements and respond to market dynamics, all while promoting sustainable innovation (Chabowski, Gabrielsson, Hult, & Morgeson, 2023)..

Circular economy (CE) goals, such as reducing waste, increasing recycling, and promoting resource efficiency, are core to sustainability efforts (Reike, Vermeulen, & Witjes, 2018; Murray, Skene, & Haynes, 2017; Ellen MacArthur Foundation, 2019). Internationalization amplifies the need for firms to adapt these goals to meet diverse global regulations, market demands, and environmental standards. Sustainability certifications help companies set benchmarks for CE practices, ensuring compliance with international standards and driving the integration of CE principles (Zhu, Sarkis, & Lai, 2007; Barrie & Schröder, 2022). The " R-Imperatives " categorizes key activities essential to CE, while energy efficiency initiatives focus on reducing energy consumption, using renewable energy, and designing products and processes to reduce energy use throughout their lifecycle (Reike, Vermeulen, & Witjes, 2018; Jensen & Remmen, 2017).

Internally, resources and capabilities are vital for CE success. Lifecycle Assessments (LCA) evaluate the environmental impacts of a company's operations and guide the adoption of more circular materials and processes (Hart & Dowell, 2011). Additionally, an Environmental Management System (EMS) helps firms systematically manage environmental performance and track their progress toward CE goals (Hart & Dowell, 2011). Social sustainability strategies, including Base of the Pyramid (BoP) initiatives, focus on inclusive business models that benefit lower-income populations (Hart, 1997). Managerial leadership is essential for framing sustainability as an opportunity for innovation, while cross-functional coordination within the firm ensures the successful integration of CE practices across different departments (Peattie, Wright, & Pujari, 2003). Investment in research and development (R&D) of clean technologies helps companies remain competitive in the face of technological uncertainty and changing regulatory landscapes (Hart & Dowell, 2011).

External pressures, particularly regulatory frameworks and market demands, play a significant role in driving CE adoption. Compliance with international environmental regulations and sustainability reporting standards is critical for firms to implement CE strategies effectively (see Figure 2). As consumer awareness of sustainability issues grows, demand for eco-friendly products rises, further incentivizing companies to align their operations with CE principles to stay competitive and meet customer expectations.

Internationalization exposes companies to varied regulatory frameworks, market demands, and innovation opportunities, which can either accelerate or hinder CE adoption. Firms must navigate the balance between global standardization and local responsiveness, adjusting their CE strategies to align with different regulatory environments and consumer expectations. Expanding into multiple countries brings both opportunities and challenges, as companies must adapt their CE strategies to diverse regions while dealing with varying levels of regulatory complexity and market maturity (DiMaggio & Powell, 1983; Powell & DiMaggio, 2004).

In terms of similarities across industries, firms share common approaches to resource efficiency, such as minimizing resource consumption, improving recycling, and enhancing energy efficiency. Companies also face similar regulatory pressures that require them to standardize CE practices across different regions. However, industries may differ in how they implement CE principles, with each sector facing unique challenges related to product design, supply chain management, and regulatory compliance. Coordinating global supply chains to support CE goals, such as ensuring suppliers adopt sustainable practices and integrating recycled materials into production processes, is a shared challenge across (Chabowski, Gabrielsson, Hult, & Morgeson, 2023).

To address these challenges, firms adopt innovative business models, such as product-as-a-service, leasing models, and take-back programs, which extend product lifespans and incentivize manufacturers to focus on durable, high-quality designs. Collaboration with governments, NGOs, and academic institutions is also key to promoting CE practices. Effective communication strategies, such as educational campaigns and eco-friendly incentives, help companies engage consumers and foster support for circular innovations. Closed-loop systems minimize waste by creating continuous cycles of resource utilization, reducing reliance on virgin materials. Circular design innovation focuses on designing products for durability, repairability, and upgradability, making it easier to recover and reuse materials. Extended producer responsibility (EPR) ensures that companies take responsibility for their products throughout their entire lifecycle, promoting sustainable end-of-life management (Hart, 1995; Hart & Dowell, 2011).

Public initiatives, partnerships with environmental groups, and community projects also play important roles in informing consumers and stakeholders about sustainable

products and practices. Internally, firms can promote a culture of sustainability by engaging and training employees through awareness programs, which encourage them to contribute to circular innovations. Circular product certifications validate that products are designed and produced with minimal environmental impact. Firms can further reduce their carbon footprint by incorporating renewable energy sources into their operations. Sustainable procurement practices ensure companies work with suppliers that adhere to strong sustainability standards, reinforcing CE principles across the supply chain (Hart, 1995; Hart & Dowell, 2011).

In conclusion, integrating the NRBV and Institutional Theory offers a robust framework for analyzing the adoption of CE practices in multinational corporations. By balancing internal capabilities with external pressures, companies can adopt CE practices that not only meet regulatory requirements but also create competitive advantages, leading to long-term value creation (see Figure 3). Internationalization acts as both a catalyst and a challenge, forcing firms to innovate while responding to diverse regulatory pressures and market demands. Firms that successfully integrate both internal strengths and external pressures will be well-positioned to implement CE practices that are both sustainable and economically beneficial.

Figure 1: Internal Factors Influencing Circular Economy (CE) Adoption

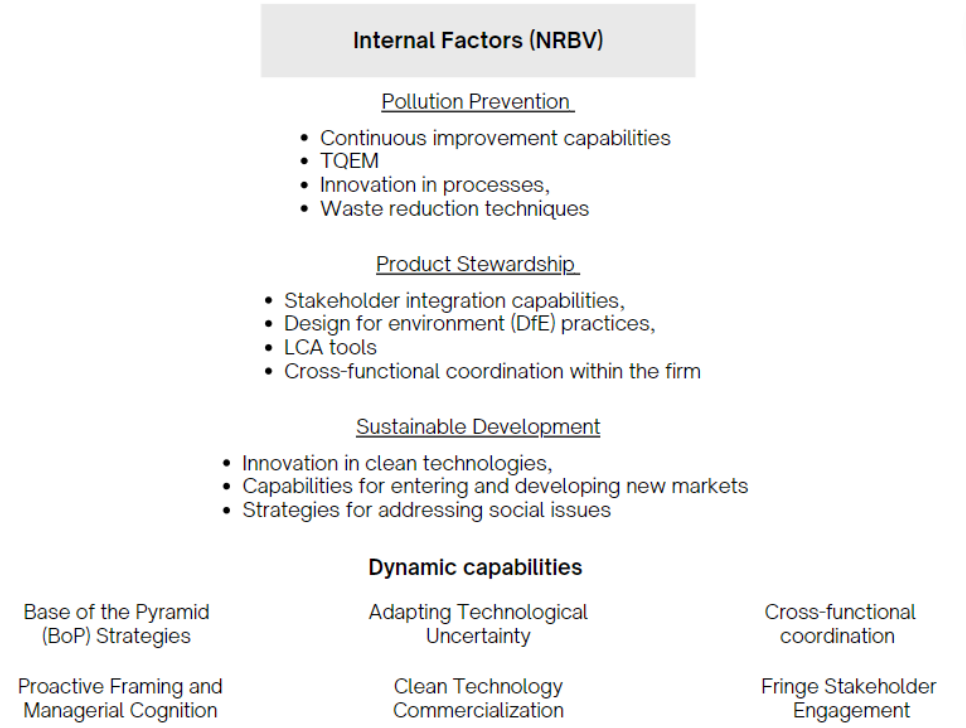
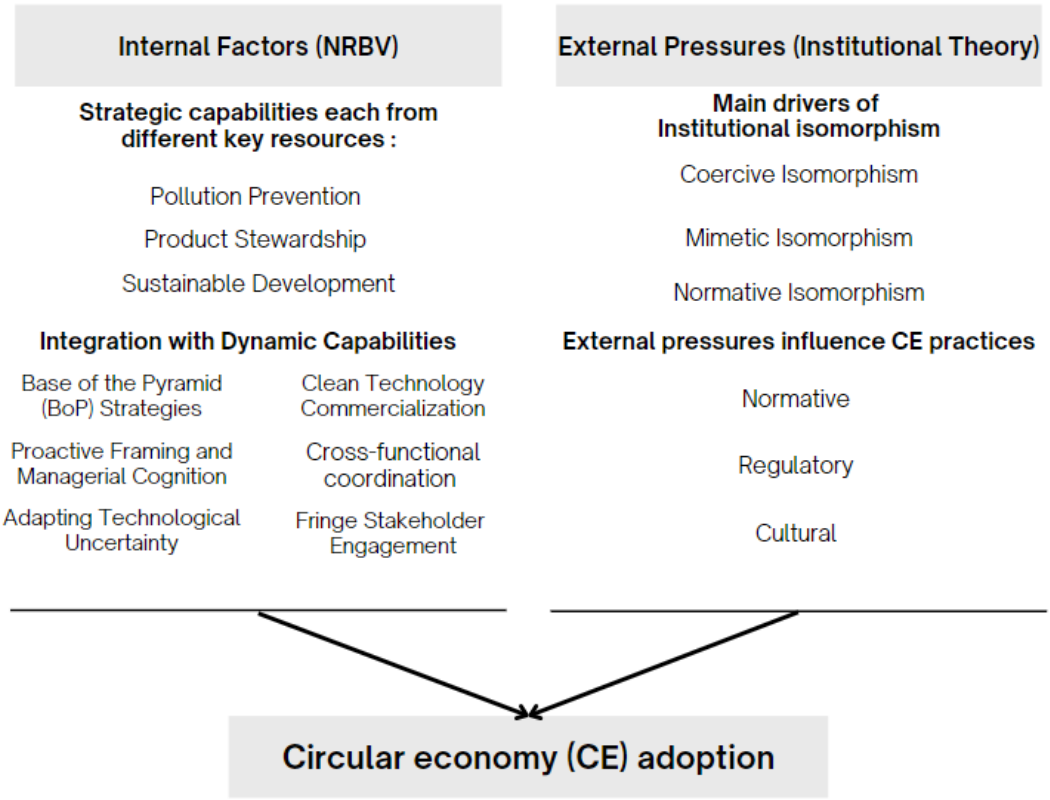


Figure 2: External Factors Influencing Circular Economy (CE) Adoption

Figure 3: The Integration of Internal and External Drivers in Circular Economy (CE) Adoption: A Framework Based on NRBV and Institutional Theory



2.4.1. Framework

This framework integrates the Natural-Resource-Based View (NRBV) and Institutional Theory to explain the adoption of circular economy (CE) practices in multinational corporations. The aim is to provide a comprehensive understanding of how internal resources and external pressures influence CE strategies. By examining both internal drivers (NRBV) and external pressures (Institutional Theory), the framework offers a holistic perspective on how companies navigate the complex sustainability landscape.

To analyze case studies effectively, this framework incorporates an evaluation of the firm's strategic goals related to CE and internationalization. It uses the "R-Imperatives" proposed by Reike, Vermeulen, and Witjes (2018) to categorize and assess CE activities. The framework also examines energy efficiency initiatives, including efforts to reduce energy consumption and integrate renewable energy sources, and reviews sustainability certifications that guide CE adoption.

First, the Natural-Resource-Based View (NRBV) highlights the importance of leveraging a firm's internal resources and capabilities to achieve sustainability. Proactive strategies include tools such as Lifecycle Assessments (LCA), which evaluate environmental impacts across a product's lifecycle to guide resource efficiency and waste reduction efforts, and Environmental Management Systems (EMS), which systematically manage and improve environmental performance. Additionally, Base of the Pyramid (BoP) initiatives focus on inclusive business models that address social sustainability by engaging lower-income populations. Investment in research and development (R&D) drives clean technology innovation, fostering long-term competitive advantages. Managerial leadership and cross-functional coordination play pivotal roles in embedding circular principles into the organizational culture, ensuring sustainability is integrated across all departments. A central tenet of the NRBV is dynamic capability development, which enables firms to adapt their resources and strategies to changing environmental and market conditions. Collaborations with external stakeholders, such as regulators, NGOs, and communities, further enhance the firm's capacity to innovate and implement CE practices.

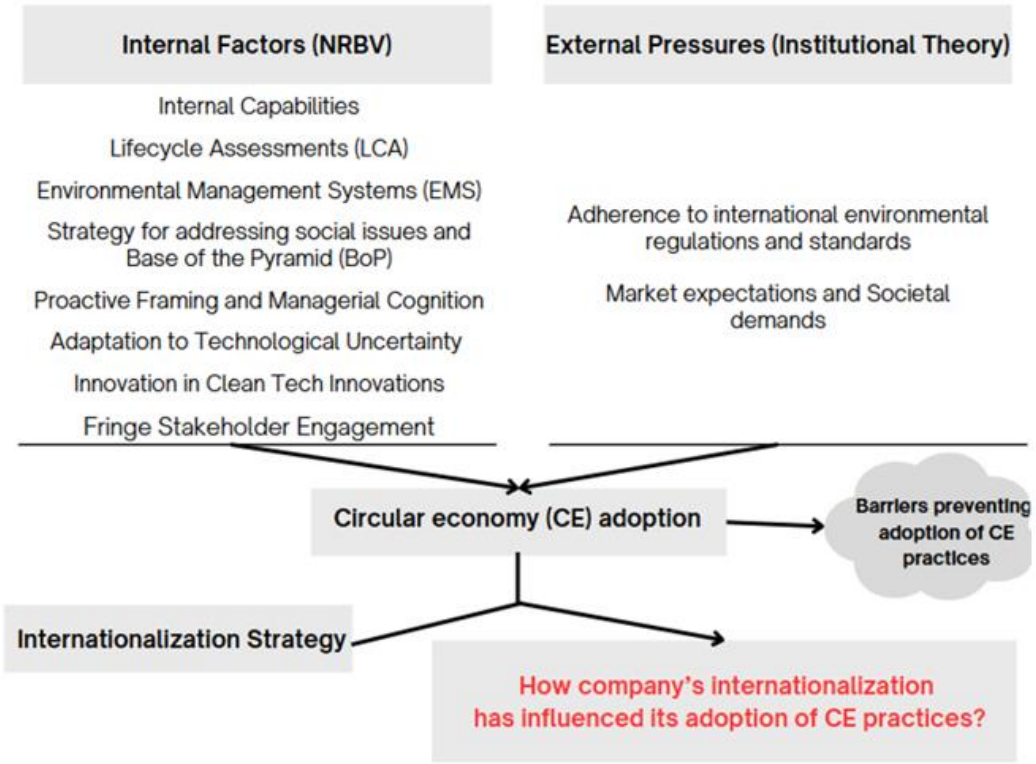
Institutional Theory, on the other hand, focuses on the external pressures that drive companies to adopt CE practices. These pressures come in the form of regulatory requirements, market demands, and societal expectations. Companies must comply

with international environmental regulations and sustainability standards, which often necessitate the adaptation of their processes and products to align with CE principles. Increasing consumer demand for environmentally friendly products also pushes companies to adopt sustainable practices. Mimetic and normative pressures encourage firms to follow best practices established by industry leaders, while coercive pressures come from regulatory bodies that set environmental benchmarks and guidelines.

By integrating the NRBV's focus on internal capabilities with Institutional Theory's emphasis on external pressures, this framework provides actionable insights for CE adoption. Firms must balance resource development with compliance demands to create resilient strategies. Internationalization exposes firms to diverse regulatory and market conditions, requiring a trade-off between global standardization and local responsiveness. Success depends on investing in clean technologies, fostering innovation, and collaborating with stakeholders. Firms can also leverage educational campaigns and incentives to align consumer behavior with circular goals, enhancing the adoption of sustainable practices.

This integrated framework offers a robust approach to understanding the adoption of CE practices in multinational corporations. The interplay between internal drivers and external forces highlights the need for strategic alignment, enabling firms to achieve sustainability while maintaining a competitive edge in global markets.

Figure 4: Framework illustration



3. Field study

The field study focuses on analyzing how internationalization contributes to the adoption of circular economy (CE) practices in three multinational corporations: Philips, Unilever and IKEA. This section provides an in-depth examination of each company's sustainability strategies, CE initiatives, and the internal and external factors influencing their adoption of CE practices. The study employs a qualitative research approach through desk research, utilizing publicly available information from corporate reports, websites, press releases, and academic sources.

Companies:

Philips: Dutch multinational conglomerate, active in healthcare, consumer electronics, and lighting sectors. In healthcare, it specializes in diagnostic imaging, patient monitoring, and health informatics. The company is known for its commitment to

sustainability and innovation, with operations in 75 countries and around 70,000 employees globally. (Philips, 2023).

Unilever: British-Dutch multinational company operating in the fast-moving consumer goods (FMCG) sector. It specializes in food and beverages, cleaning agents, beauty and personal care, and health and wellness products. Renowned for its environmental initiatives and international reach, Unilever works in more than 190 countries and employs around 120,000 people overall. (Unilever, 2023)

IKEA: Swedish global furniture and home products corporation. It develops and markets kitchen appliances, ready-to-assemble furniture, and home accessories. Celebrated for its modernist designs and environmental initiatives, IKEA employs about 220,000 people globally and has stores in more than 50 countries. (IKEA, 2023).

3.1. Philips

3.1.1. Goals related to CE practices

Philips aims to elevate its circular revenues from 18.2% in 2022 to 25% by 2025, indicating an estimated increase of 6.8 percentage points in sales derived from goods, services, and solutions that promote circularity (Philips, 2023, p. 51). The organization has achieved zero waste to landfill in 2022 and 2023, with intentions to sustain this achievement and expand it to include all small and big medical equipment by 2025. Nonetheless, their Zero Waste to Landfill KPI omits one-time waste and garbage sent to landfills owing to legislative mandates. In 2023, they recorded 2.7 tonnes of waste sent to landfill, a little rise from 1 tonne in 2022. By the conclusion of 2023, all 23 industrial locations attained Zero Waste to Landfill accreditation (Philips, 2023, p. 55, 246). Furthermore, Philips achieved 91% circular materials management in 2022, sustaining that level in 2023, with the objective of achieving 95% by 2025. This approach emphasizes reducing the use of virgin materials, enhancing the application of recycled and renewable resources, and ensuring that products are designed for straightforward recyclability and reuse. (Philips, 2023, p. 249)

3.1.2. Goals related to internationalization

Philips seeks to augment its footprint in both established and developing countries, such as China, the United States, and the European Union, through the execution of market-

specific strategies. These techniques encompass localized invention, production, and assembly designed to address the specific requirements of each market. Moreover, Philips is concentrating on enhancing its global supply chain and production processes to swiftly respond to variations in demand and supply. The corporation prioritizes proximity to clients, which is why it has formed innovation teams in critical markets such the USA, India, and China. This localized strategy enables Philips to acquire profound insights into the distinct requirements of each market, ensuring that their inventions are pertinent and efficacious (Philips, 2023, p. 91).

3.1.3. Sustainability certifications

Philips has many sustainability certifications. The firm declares its ISO 14001 accreditation, indicating compliance with environmental management requirements (Philips, 2023, p. 251). Furthermore, Philips releases its comprehensive Annual Report with the utmost degree of confidence, termed reasonable assurance, from an independent auditor, including its financial, environmental, social, and governance (ESG) performance. This establishes Philips as a frontrunner in the sector for transparent and dependable ESG reporting. Since March 2007, Philips has participated in the United Nations Global Compact, pledging to uphold 10 universal principles of human rights, labor, the environment, and anti-corruption (Philips, 2023, p. 63).

Moreover, all suppliers must adhere to the Supplier Sustainability Declaration (SSD) and the Restricted Substance List (RSL) as part of the Sustainability Agreement in Purchasing Agreements. Suppliers must adhere to these requirements as stipulated in their contractual agreements with Philips. This guarantees that the materials and goods provided comply with Philips' environmental and social criteria. Moreover, Philips' Supplier Sustainability Performance (SSP) initiative actively involves suppliers in an ongoing enhancement process, consistent with internationally acknowledged standards. Suppliers are evaluated and classified according to their sustainability performance, with high-risk suppliers subjected to comprehensive assessments. All major suppliers must execute specific enhancement strategies to mitigate their environmental footprint (Philips, 2023, p. 263).

3.1.4. CE initiatives

1. Refuse:

For this particular R-principle, Philips does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

2. Reduce:

Philips collaborates with suppliers to enhance their environmental performance by minimizing emissions and waste. This partnership is integral to a comprehensive strategy aimed at managing and mitigating CO2 emissions throughout the supply chain (Philips, 2023, p. 49).

Philips' EcoDesign initiative emphasizes four primary domains: Energy, Substances, Circularity, and Packaging. The initiative encompasses measures to enhance product energy efficiency, reduce hazardous compounds, and facilitate package recyclability. Philips intends to create lighter items that utilize less materials and conserve energy during transportation (Philips, 2023, p. 52, 305).

Philips has implemented numerous operational modifications that have substantially reduced waste. They have optimized material utilization in manufacturing, leading to a 15% reduction in waste at their facilities in 2023 relative to the prior year (Philips, 2023, p. 49).

Philips prioritizes the reduction of procurement expenses through supplier consolidation, utilization of low-cost regions, and simplification of product designs (Philips, 2023, p. 99).

3. Resell/Reuse:

Philips' "Closing the Loop" policy entails the retrieval of professional medical equipment from clients. This policy endorses sustainable practices and circular economy concepts by reintegrating used products into the market, reflecting both the supply and demand aspects of market activities (Philips, 2023, p. 248, 299).

In 2023, Philips retrieved around 11,500 systems or pieces of equipment, predominantly patient monitors, via a specialized take-back program (Philips, 2023, p. 249).

In 2023, 1,655 tonnes of materials from Diagnosis & Treatment and Connected Care were repurposed, demonstrating the effective implementation of re-use in their activities (Philips, 2023, p. 248).

4. Repair:

The company provides assurance-type product warranties and, for certain items, offers extended warranty services. These warranties sometimes include gratis repairs and replacements, indicating a commitment to repair and maintain products, thereby extending their functionality (Philips, 2023, p. 159).

The organization provides an extensive program for the repair and replacement of medical devices, including CPAP, BiPAP, and ventilators. This program seeks to rectify issues with existing items, thereby reinstating their functionality and prolonging their operational lifespan (Philips, 2023, p. 105, 190).

Philips emphasizes preventative maintenance services as an integral part of its holistic product support strategy. This includes software upgrades and maintenance tasks that enhance the functionality of devices, such as magnetic resonance systems. These operations ensure a reliable provision of value and extend the product's operating longevity (Philips, 2023, p. 92).

5. Refurbish:

Philips has more than 25 years of experience providing hospitals with refurbished imaging systems, such as MR, CT, Ultrasound, and Image Guided Therapy systems. These systems, part of their Circular Edition portfolio, are refurbished to be 'as good as new' and comply with high-quality standards, including ISO standard 13485. This practice not only extends the life of the equipment but also significantly reduces carbon footprint by reusing materials. The carbon footprint of a refurbished MR system is stated to be 45% lower than that of a new system, highlighting the environmental benefits of refurbishment in reducing emissions associated with the production and use of new materials (Philips, 2023, p. 248, 249).

6. Remanufacture:

For this particular R-principle, Philips does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

7. Repurpose

For this particular R-principle, Philips does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

8. Recycle Materials:

In 2023, Philips disclosed the utilization of 23% recycled content in their materials, hence diminishing the reliance on virgin resources (Philips, 2023, p. 247).

Philips has established collaborations with retailers and national recycling initiatives in Europe to tackle the disposal of obsolete products. In 2023, this partnership facilitated the recycling of about 11,800 metric tons of items and packaging (Philips, 2023, p. 249).

Philips asserts that a substantial proportion of the materials in their products, including metals utilized in the Diagnosis & Treatment and Connected Care divisions, is derived from recycled sources. This method diminishes dependence on new materials, hence promoting the circular economy framework. Philips employs a certified recycling network to process materials, guaranteeing that recycled materials are reintroduced as raw materials devoid of their original form (Philips, 2023, p. 247, 248).

9. Recover (Energy):

Materials delivered to incineration and landfill amounted to 1,929 tonnes, which equals 10% of the total waste, of which 74% comprised non-hazardous waste and 26% hazardous waste. Philips recorded 1,531 tonnes of waste prevented in our own activities in 2023, compared to 1,484 tonnes in 2022 (Philips, 2023, p. 55, 56).

10. Re-mine:

For this particular R-principle, Philips does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

Not pertinent to a single category:

- In 2023, Philips reintroduced 1,700 tonnes of secondary reused materials into the market, mainly from refurbished medical equipment (Philips, 2023, p. 248).

• Philips reached a milestone, with 20% of their sales coming from circular products and services. This success comes from using recycled materials, refurbishing old products, and designing items to last longer and be easier to recycle (Philips, 2023, p. 51).

• Philips managed to deliver 17,446 tonnes of materials for reuse, recovery, or recycling through an external contractor, which accounts for 90% of their total waste (Philips, 2023, p. 55).

• Since 2021, Philips have been using a Circular Materials Management percentage instead of the recycling percentage metric. By 2023, this figure stayed steady at 91%, matching the previous year. This metric covers recycling, reuse, prevention, and other recovery methods, but it doesn't include linear disposal like landfill and incineration (Philips, 2023, p. 55).

3.1.5. Energy efficiency

Philips has designated 0.4% of its overall capital investment for the improvement of energy efficiency in its buildings, encompassing the installation of energy-efficient heating, ventilation, and air conditioning (HVAC) systems. The corporation has also invested in onsite renewable energy production, including the installation of solar panels at select factories. Consequently, Philips decreased their overall energy consumption by 5% in 2023, reducing it to 322,532 megawatt hours (MWh) from 338,140 MWh in 2022. This reduction was mostly ascribed to energy conservation initiatives and advantageous meteorological circumstances affecting larger locations (Philips, 2023, p. 249, 252).

The Diagnosis & Treatment category represented around 52% of total energy consumption, whilst the Personal Health segment accounted for 36%. The Connected Care division claimed a 5% decrease in energy use as a result of operational modifications. Philips has enacted a global energy policy that involves the closure of specific buildings to enhance energy efficiency and the relocation to more energy-efficient sites (Philips, 2023, p. 240, 249).

The corporation attained 78% renewable energy utilization in 2023, above its 2025 objective of 75%. This encompasses electricity derived from renewable energy sources,

including wind farms in the United States and the Netherlands (Philips, 2023, p. 25, 250).

3.1.6. Internal resources and capabilities (NRBV Analysis)

The implementation of Lifecycle Assessments (LCA) for evaluating the environmental impact:

Since 1990, Philips has been performing Life-Cycle Assessments (LCAs) to thoroughly evaluate the environmental impact of its goods across their full lifecycle. The corporation employs an Environmental Profit and Loss (EP&L) account, which is founded on the Life Cycle Assessment (LCA) methodology, in conjunction with LCAs. This method capitalizes on environmental effects, enabling Philips to pinpoint critical environmental hotspots and opportunities for innovation. The EP&L account employs conversion factors established by CE Delft, with continual enhancements anticipated as more precise data is obtained. In 2023, Philips effectively diminished its environmental impact to EUR 4.21 billion, a decrease from the adjusted 2022 EP&L impact of EUR 4.38 billion (Philips, 2023, p. 46).

Environmental Management System (EMS)

Philips upholds an Environmental Management System (EMS) compliant with the ISO 14001 standard, a worldwide benchmark for environmental management. The company's commitment to systematic environmental management and continuous improvement in environmental performance is demonstrated by the accreditation of all its manufacturing facilities under ISO 14001 (Philips, 2023, p. 251).

Strategy for addressing social issues and Base of the Pyramid (BoP)

The Philips Foundation, founded in 2014, aims to mitigate healthcare inequities by granting impoverished populations access to high-quality healthcare via substantial breakthroughs. The Foundation obtains financial support to fulfill its objective by leveraging Philips' expertise in healthcare, innovative capabilities, talented staff, and resources. It collaborates with essential players, such as non-governmental groups, academic institutions, and entrepreneurs, to develop solutions that enhance persons' well-being. The foundation aims to enhance healthcare accessibility in disadvantaged regions by implementing scalable and financially sustainable solutions, so ensuring enduring healthcare delivery. In 2023, the Philips Foundation obtained a contribution of

EUR 6.7 million from Royal Philips and employed proficient volunteers to execute its activities. The Foundation primarily focuses on Impact Investments, directing funds towards early-stage social entrepreneurs that provide healthcare advances for underprivileged communities. These technologies facilitate medical assessments, early diagnosis, and prompt referrals, with the objective of delivering accessible, inexpensive, scalable, and financially sustainable healthcare solutions. Another crucial domain is Grant-Based Projects, which tackle specific healthcare issues in partnership with local groups and Philips personnel. These programs concentrate on providing healthcare technology and solutions customized to community requirements, including the establishment of healthcare facilities, provision of essential medical equipment, and training of local healthcare personnel. The Foundation utilizes Philips' Telehealth Technologies to enhance healthcare services. These technologies provide remote healthcare services, such as virtual consultations, remote monitoring, and tele-diagnosis, facilitating prompt medical evaluations and treatments while alleviating pressure on local healthcare systems. The Foundation also administers Educational Programs designed to encourage healthy behaviors in young patients. In Ukraine, the Foundation initiated a project aimed at educating children and adolescents on the maintenance of healthy lifestyles and preventive health management (Philips, 2023, p. 64, 82, 262, 263).

Proactive Framing and Managerial Cognition and Cross-functional coordination within the firm

The integration of sustainability into Philips' strategy is a thorough process, directed by the Board of Management and monitored by the Supervisory Board. This framework guarantees that all major business decisions are assessed for their environmental and social ramifications, integrating Philips' sustainability aims with its overarching commercial objectives. The Board of Management conducts regular meetings centered on Environmental, Social, and Governance (ESG) issues, which include key executives from the Executive Committee, such as the Chief Operating Officer, Chief Strategy & Innovation Officer, Chief Human Resources Officer, Chief Business Leader of Precision Diagnosis, and Chief International Markets Leader. They collaboratively formulate Philips' ESG strategy, devise programs, establish targets, and implement pertinent policies. Philips' strategy orientation is founded on collaboration, with sustainability as a primary emphasis. ESG activities are perpetually assessed and scrutinized to guarantee

advancement towards defined objectives. The Executive Committee and the Board of Management closely monitor the performance of ESG-related operations, responding promptly when deviations from the intended approach arise, thus assuring the achievement of sustainability objectives (Philips, 2023, p. 67, 238).

Furthermore, ESG performance is consistently communicated to the Audit Committee of the Supervisory Board, allowing them to execute their oversight responsibilities by verifying the correctness and dependability of ESG reporting. This consistent reporting ensures openness and accountability, enabling Philips to implement timely modifications and enhancements in its sustainable processes to promote ongoing improvement (Philips, 2023, p. 286, 288).

Adapting to Technological Uncertainty

In 2023, Philips dedicated 10.4% of its revenues, totaling EUR 1,890 million, to Research and Development (R&D), demonstrating the company's robust commitment to innovation and market leadership. This substantial investment underscores Philips' commitment to technological advancement and sustaining its competitive advantage. The company's divisions amalgamate research and development, facilitating direct engagement between specialists and clients. This framework facilitates tight collaboration between R&D teams and stakeholders in the creation of innovative goods (Philips, 2023, p. 21, 31).

The Intellectual Property & Standards (IP&S) section of Philips is essential for fostering growth, enhancing competitiveness, and ensuring profitability. In conjunction with the company's operational divisions and the Innovation & Strategy department, IP&S facilitates the creation of new intellectual property. In 2023, Philips has an extensive intellectual property portfolio, comprising approximately 53,000 patents, 31,500 trademarks, 135,000 design rights, and 3,300 domain names. In 2023, the corporation submitted 795 new patents, emphasizing health technology services and solutions. This comprehensive portfolio highlights Philips' commitment to safeguarding and utilizing its technologies, so ensuring its sustained market leadership (Philips, 2023, p. 21).

Innovation in clean technologies

In 2023, Philips allocated EUR 142 million to Green/EcoDesigned Innovation, reflecting a decrease attributed to the implementation of more stringent EcoDesign criteria, a

reallocation of innovation funding towards software development, and a reduction in overall R&D expenditures. Notwithstanding this reduction, Philips is dedicated to augmenting its investment in Green/EcoDesigned Innovation, in accordance with its 2025 ESG objectives, which seek to guarantee that all new product launches comply with EcoDesign standards by 2025 (Philips, 2023, p. 52).

Additionally, Philips reaffirmed its dedication to the United Nations' Sustainable Development Goals by allocating approximately EUR 1.5 billion towards Sustainable Innovation in 2023. The company's Green/EcoDesigned Products comply with rigorous standards that prioritize energy efficiency, the utilization of recycled materials, the exclusion of hazardous components, and circular design principles. These projects aim to enhance product energy efficiency and minimize the utilization of hazardous compounds in production processes, illustrating Philips' steadfast commitment to sustainability and responsible innovation (Philips, 2023, p. 52, 305).

Fringe Stakeholder Engagement

Initiatives that are designed to inform environmental groups and local communities about sustainable products and practice:

Philips engages in collaboration with Friends of the Earth on lobbying and policy formulation concerning environmental protection and sustainability. This collaboration emphasizes critical environmental concerns, including climate change, the advancement of renewable energy, waste reduction, and the promotion of sustainable consumption and manufacturing practices. Philips seeks to effect policy and legislative modifications that further these environmental objectives through this collaboration (Philips, 2023, p. 66).

Furthermore, Philips collaborates with Greenpeace to advocate for environmental sustainability and corporate accountability. Their collaboration encompasses engagement in research endeavors, legislative lobbying, and multi-stakeholder efforts designed to mitigate the environmental impact of Philips' operations and products. Primary objectives encompass diminishing greenhouse gas emissions, eradicating hazardous materials, and promoting circular economy initiatives (Philips, 2023, p. 50).

Philips sustains a strategic alliance with the Ellen MacArthur Foundation (EMF) to advance circular economy ideas. In collaboration with fellow design leaders in EMF’s

"Circular Design Leaders" group, Philips contributed to the development of the "Adaptive Strategy for Circular Design," which delineates six principal emphasis areas to facilitate a circular transformation within organizations:

1. Observe and interpret system: This entails delineating the complete system and its participants, comprehending the interrelations, dependencies, and dynamics involved.

2. Imagine circular futures: By conceptualizing and picturing circular scenarios, businesses may involve stakeholders and dismantle obstacles, promoting collaboration and innovation towards a collective circular vision.

3. Establish collaborative conditions: Circular design necessitates the cooperation of several stakeholders. This lever emphasizes the creation of conditions that facilitate efficient collaboration among stakeholders, utilizing their respective strengths to address intricate difficulties.

4. Make circular design possible: This lever underscores the necessity of cultivating essential competencies within design and innovation teams to transition from a linear to a circular economy.

5. Rewrite rules: This entails the creation of new directives and principles for Circular design that can diminish uncertainty and address trade-offs in the development of circular products and services.

6. Create design and evaluation tools: These can stimulate creativity and foster collaboration in the examination of circular economy opportunities and the alignment of strategies. To select the optimal circular design tool, we must evaluate the overarching objectives and implications. Envision reconfiguring KPIs that are beneficial for the linear economy rather than monitoring advancement. (Ellen MacArthur Foundation, n.d.).

Philips is collaborating with the EMF to finalize a Circulytics assessment to evaluate the company's circular economy performance. Philips is furthering its Biodiversity and Ecosystem Services (BES) projects, which aim to restore and enhance biodiversity at its industrial locations. These activities are executed through partnerships with NGOs, local communities, and governments, facilitating ecological restoration. Philips has established a BES community and educated staff at all manufacturing facilities regarding ecosystem services, resulting in the mapping of these services at those locations. This methodology enhances comprehension of natural capital linkages and effects,

facilitating decisions that advantage both the environment and local residents. Philips underscores collective accountability in safeguarding and improving biodiversity and ecological services through these initiatives (Philips, 2023, p. 51).

Initiatives that are designed to inform consumers and employees about sustainable products and practices:

In 2023, Philips initiated the "Better than New" campaign in Germany to address the increasing demand for refurbished products and to enhance consumer knowledge of the advantages of selecting these things. The campaign emphasizes the economic and environmental benefits of acquiring refurbished products, promoting more sustainable consumption practices (Philips, 2023, p. 249).

Philips has further developed its EcoDesign program, an essential component of the company's circular economy strategy. By 2025, all new goods will comply with EcoDesign standards, integrating recycled and bio-based components. Products will be engineered to be lightweight, resilient, easily disassembled, and recyclable. Philips effectively conveys its sustainable design concepts via marketing and product information, aiding consumers in comprehending how their purchase decisions can beneficially influence environmental sustainability. This transparency cultivates consumer trust and facilitates more informed decision-making (Philips, 2023, p. 247, 305).

Furthermore, Philips allocates resources to educate its employees on the ideas of the circular economy. Employees can access educational tools, like the Circular Economy Masterclass offered by the University of Exeter Business School and the Basic Course provided by the Ellen MacArthur Foundation. These courses, coupled with training on sustainability practices and circular design, guarantee that staff are proficient in the company's sustainable endeavors. Philips maintains staff engagement and awareness of these practices by consistent communications, such as email updates and team meetings, so assuring alignment with the company's sustainability objectives (Philips, 2023, p. 246).

Promoting Circular Economy practices through collaboration with regulators:

Philips has collaborated with the Platform for Accelerating the Circular Economy (PACE) since its establishment by the World Economic Forum in 2018. PACE's purpose is to

promote global leadership among enterprises, governments, and civil society to expedite the transition to a circular economy. Philips' partnership with PACE aims to strengthen the link between climate action and circularity while advancing mineral circularity for global resilience. Furthermore, Philips collaborates with the World Business Council for Sustainable Development (WBCSD) to establish standardized criteria for the circular economy. Philips seeks to enhance global circular economy principles through this relationship by utilizing WBCSD's extensive network and experience. Philips engages in numerous meetings and task groups convened by WBCSD, promoting the exchange of best practices and endorsing the implementation of sustainable business initiatives (Philips, 2023, p. 272).

Philips actively engages with various stakeholders to advocate for circular practices worldwide. Philips collaborates with the World Economic Forum and many international organizations, NGOs, labor unions, and corporate alliances to promote and enhance circular economy projects (Philips, 2023, p. 65).

Philips actively influences the formulation of laws, rules, and recommendations to advance sustainability, collaborating closely with international and national governments. They are notably engaged in the Dutch Circular Economy Agenda (NPCE), where they promote policies designed to diminish the utilization of virgin resources, in accordance with their 2025 circularity objectives. Philips' advocacy initiatives aim to shape legislation to establish effective and significant structures that facilitate the transition to a circular economy (Philips, 2023, p. 246). Through these efforts, Philips aligns with both current and forthcoming regulations that bind the company..

Barriers preventing adoption of CE practices

Philips integrates acquisitions as a fundamental component of its growth strategy, seeking to enhance its competencies and market presence. Nonetheless, the incorporation of these acquired companies or operations into the current corporate framework may present substantial obstacles to CE standards, particularly when misaligned with Philips' internal resources, competences, and dynamic capabilities. Successful integration requires adapting and reconfiguring these capabilities to align operational methods, supply chains, and sustainability strategies. If the acquired company exhibits divergent practices, this can lead to inefficiencies, misalignment of

objectives, and challenges for Philips in pursuing its CE strategy. Additionally, the integration of a new business may delay or complicate the inclusion of sustainability into the overall corporate plan (Philips, 2023, p. 65).

3.1.7. External pressures (Institutional Theory)

Adherence to international environmental regulations and standards:

Philips complies with a range of international environmental regulations:

1) EU

Circular Economy Action Plan: The plan is dedicated to the transition from a linear economy, in which resources are consumed and subsequently disposed, to a circular economy, which is designed to dissociate economic growth from resource consumption. This entails maximizing material use, eradicating waste and pollution, and perpetuating the circulation of goods and materials to enable the regeneration of natural systems. Philips' circular economy initiatives align with this Plan; the company's approach include enhancing the circularity of resource inflows and outflows, reducing reliance on virgin materials, and optimizing product lifecycles via circular design and responsible end-of-use management.

Waste from Electrical and Electronic Equipment (WEEE): Under this rule, the makers of such equipment are required to take responsibility for the disposal of waste electrical and electronic equipment. Philips adheres to these rules by engaging in national collection and recycling initiatives, especially in Europe, where sophisticated programs are established.

Restriction of Hazardous Substances (RoHS): This regulation forbids the use of specific hazardous substances in electrical and electronic apparatus within the European Economic Area (EEA). It specifically bans the presence of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), and four phthalates (DEHP, DBP, BBP, and DiHP) to quantities below designated thresholds. The specified thresholds are 0.01% by weight for cadmium and 0.1% for the other nine chemicals per homogenous material. Philips oversees this regulation via its Regulated Substances List.

Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH): This regulation pertains to the production and utilization of chemical substances and their

potential effects on the environment and human health. It is included in the Philips Regulated Substances List as an aspect of their compliance initiatives.

EcoDesign Directive: This directive entails the development of products with an emphasis on minimizing their environmental impact throughout their lifecycle. Key characteristics include energy economy, use of recycled and bio-based materials, product design for longevity, disassembly, and recyclability. Philips intends for all new goods launched by 2025 to comply with EcoDesign standards.

European Corporate Sustainability Reporting Directive (CSRD) and European Sustainability Reporting Standards (ESRS): These requirements would compel Philips to significantly broaden the scope of mandated ESG disclosures, including the need to detail circular economy initiatives.

European Corporate Sustainability Due Diligence Directive: The rule mandates enterprises to identify and address adverse impacts on human rights and the environment across their whole activities, potentially including their entire value chain. This mandate will compel Philips to ensure that their activities meet certain sustainability and human rights standards, significantly broadening the extent of their environmental, social, and governance (ESG) disclosures.

2) USA

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980: Commonly referred to as Superfund, it compels corporations to assume accountability for their ecological footprint by mandating their participation in the remediation of hazardous waste sites to which they have contributed. This legislation compels corporations to meticulously manage their trash and evaluate the long-term environmental consequences of their activities, since they may be required to engage in remedial efforts for any pollution.

Resource Conservation and Recovery Act (RCRA): Companies that create, transport, process, store, or dispose of hazardous waste must adhere to stringent management guidelines. Businesses must guarantee the safe management of hazardous waste from its inception to its disposal. This legislation encourages corporations to implement optimal waste management practices, invest in waste reduction technology, and develop systems that minimize hazardous waste production.

Clean Water Act (CWA): It mandates that corporations regulate their effluents into U.S. waterways via designated licenses and compliance with water quality criteria. This legislation compels corporations to invest in pollution mitigation technology and sustainable water management techniques. Businesses are urged to innovate and reduce their influence on aquatic ecosystems, fostering sustainable practices.

Clean Air Act (CAA): It mandates that corporations restrict air pollution from fixed sources, like industries, and mobile sources, such as cars. Companies are incentivized to use pollution control systems or alter their operations to reduce emissions. This legislation stimulates innovation as corporations seek efficient methods to comply with emissions regulations while preserving operational efficacy.

Toxic Substances Control Act (TSCA): It empowers the EPA to oversee the regulation of chemicals used in production. Companies are required to disclose any new chemicals they plan to manufacture or import and may be obligated to evaluate the possible dangers linked to these substances. If certain chemicals are limited, firms are prompted to reformulate goods or identify safer alternatives. The TSCA advocates for the development of safer materials and more sustainable product designs.

Emergency Planning and Community Right-to-Know Act (EPCRA): It mandates enterprises to disclose the storage, use, and emission of hazardous substances to regulatory authorities. This openness compels corporations to carefully manage their chemical stockpiles and to invest in safety enhancements and disaster preparedness. The legislation promotes a culture of responsibility and proactive risk management inside organizations.

3) China

Environmental Protection Law (EPL): Under this legislation, businesses have a lot of responsibilities to safeguard the environment. Organizations must get licenses for pollution emissions and rigorously comply with national environmental regulations. Prior to initiating new projects, it is essential to undertake Environmental Impact Assessments (EIA) to assess and manage any environmental concerns, with requisite clearance obtained before advancement. Furthermore, corporations must consistently assess their environmental effect and submit reports to authorities, facing fines for non-compliance. These duties underscore the vital importance of corporate accountability in environmental protection under Chinese law.

Air Pollution Prevention and Control Law: This legislation establishes rigorous regulations for the emission of hazardous pollutants, with a particular emphasis on industrial sources such as factories, power plants, and vehicles. Legislation mandates that corporations implement and maintain pollution control apparatus to mitigate the release of principal pollutants such as sulfur dioxide (SO2), nitrogen oxides (NOx), and particulate matter (PM2.5). The legislation requires enterprises to consistently monitor their emissions and provide the data to environmental authorities, so assuring openness and adherence to regulations.

Water Pollution Prevention and Control Law: This law's particular goal is to prevent and control water pollution by regulating the discharge of pollutants into the country's lakes, rivers, groundwater, and other water bodies. The legislation requires all corporations to comply with stringent wastewater discharge regulations. These rules are established to reduce the discharge of deleterious compounds into aquatic environments. Companies must get licenses prior to dumping wastewater, and legislation establishes explicit restrictions on the kinds and volumes of pollutants permitted for emission. The regulation not only regulates discharge but also underscores the need of treating wastewater prior to its environmental release. Companies are obligated to invest in wastewater treatment facilities and ensure their proper operation.

Circular Economy Promotion Law: This legislation pushes businesses to use greener manufacturing methods and incorporate circular economy ideas into their daily operations. This encompasses the reduction of resource consumption, the mitigation of waste creation, and the enhancement of resource use efficiency over the whole lifespan of goods, from design and manufacturing to consumption and disposal. Companies are encouraged to create technology and procedures that facilitate the recycling and repurposing of waste materials, transforming potential refuse into useful resources. The legislation offers several incentives, including tax advantages, subsidies, and access to specialized funds for enterprises who actively participate in circular economy activities. Furthermore, the legislation promotes research and development in technologies that enhance recycling and optimize resource use. It also promotes the establishment of eco-industrial parks, where enterprises from many sectors may collaborate to enhance resource efficiency and reduce waste.

4) International standards:

Global Reporting Initiative (GRI) standards: Philips has prepared its integrated annual report with reference to the GRI Universal Standards 2021. These standards are part of a framework committed to continuous improvement and application worldwide. Specific elements of the GRI standards, particularly those related to environmental impact and resource management, are directly connected to Circular Economy (CE) practices. By emphasizing transparency, the GRI standards support the adoption of CE principles, encouraging companies like Philips to integrate sustainability and resource circularity into their business models.

United Nations Global Compact: Philips signed up to the United Nations Global Compact in March 2007 to advance 10 universal principles in the areas of human rights, labor, the environment and anti-corruption. The company General Business Principles, Human Rights, Sustainability and Environmental Policies, and Supplier Sustainability Declaration are the cornerstones that enable the corporation to live up to the standards set by the Global Compact.

Market expectations and Societal demands

Philips adopts a proactive strategy for environmental stewardship by establishing elevated sustainability standards to attain legitimacy, maintain compliance, and strengthen its competitive advantage in the industry. The Double Materiality Assessment, undertaken yearly, is a crucial instrument for the organization in determining its environmental, social, and governance (ESG) priorities. This evaluation assists Philips in prioritizing the most critical ESG issues, highlighting crucial environmental concerns such as climate change, the circular economy, energy efficiency, and waste management (Philips, 2023, p. 13).

Philips implements the Natural Capital program as a component of its environmental strategy, which measures and actively mitigates the ecological impact of its operations, supply chain, and product usage phases. Philips is dedicated to safeguarding and rehabilitating biodiversity, especially at its industrial locations, and participates in ecosystem restoration initiatives through this program. These activities are executed in partnership with NGOs, local communities, and governments, demonstrating the company's commitment to sustainability beyond legal obligations. The initiative aims to mitigate the company's impact on natural resources, decrease its chemical footprint,

reduce water usage, and improve biodiversity and ecosystem services (Philips, 2023, p. 51).

Philips utilizes an Environmental Profit & Loss (EP&L) account to monitor and reduce its environmental impact, assessing the effects of its operations and products across their full lifecycle. The EP&L account provides Philips with a clear and thorough assessment of its environmental effect by accounting for concealed expenses, including emissions, water consumption, and resource depletion. This tool assists the organization in aligning its business processes with sustainability goals and facilitates informed decision-making in the design of more sustainable products while minimizing its ecological imprint (Philips, 2023, p. 46, 237).

Philips incentivizes its employees to engage in environmental activities by providing one paid day off annually for volunteering in ecological causes. Employees are urged to participate in initiatives such as community clean-ups, tree planting, and environmental education programs. Philips collaborates with NGOs and local communities to guarantee that these initiatives have significant and beneficial outcomes (Philips, 2023, p. 260).

3.1.8. Internationalization strategy

Markets

The objective of Philips' internationalization strategy is to maintain a balance between flexibility in local markets and a worldwide presence. Philips is a global enterprise operating in more than 100 countries. It is organized into three principal regions: North America, Greater China, and the International Region, which encompasses Europe and other growing markets. This framework emphasizes local innovation, production, and collaborations to meet distinct market demands, facilitating the creation of tailored market strategies for diverse locations.

1. North America

Philips' strategy in North America focuses on enhancing healthcare innovation via technology and establishing enduring strategic alliances with prominent health institutions. The company has enhanced its partnerships with notable organizations including Northwell Health, TriHealth, and Atrium Health, emphasizing precision diagnostics and the utilization of corporate data.

Philips emphasizes collaboration with healthcare providers to provide solutions customized for the unique requirements of local communities. An illustration of this is the Enterprise Monitoring as a Service (EMaaS) solution, which standardizes patient monitoring across extensive healthcare systems such as Northwell Health and NYU Langone Health. This service is tailored to the operational and financial frameworks of U.S. hospitals, enabling access to cutting-edge technologies without substantial initial expenditure (Philips, 2023). This concept assists hospitals in improving patient care while effectively managing expenditures.

2. Greater China

Philips' strategy in Greater China is defined by the 'In China, For China' program, emphasizing regional innovation and production to improve market presence and product relevance. A crucial element of this strategy involves establishing local alliances, especially with Chinese healthcare professionals, to create tailored solutions for hospitals. Philips seeks to enhance and reinvent healthcare delivery in the region by utilizing local expertise.

The company has created a robust regional production base in China, facilitating the creation of items specifically designed for the Chinese market. This strategy enables Philips to promptly adapt to regulatory modifications and fluctuations in consumer preferences. Philips collaborates with leading Chinese hospitals to deliver sophisticated medical solutions tailored to the region's specific healthcare requirements.

Besides its healthcare emphasis, Philips interacts with Chinese consumers via digital platforms like TikTok and regional e-commerce websites. This strategy aims targeting younger demographics by improving digital engagement. Philips also launches products customized for local interests, including cosmetics and dental health items specifically developed for Chinese consumers, in accordance with its extensive online engagement initiatives.

3. Europe and Growth groupings

Philips aspires to be a revolutionary partner in healthcare within the International Region, encompassing Europe and other emerging regions. The organization partners with local healthcare institutions to create solutions customized for the distinct healthcare requirements of each region. These collaborations are essential for Philips

to guarantee that its products and services remain both successful and pertinent by recognizing and addressing local market realities.

Philips concentrates on creating AI-enabled medical devices tailored to the specific needs of European healthcare systems. This strategy guarantees that their products adhere to local norms and standards, enabling Philips to provide new solutions that correspond with the healthcare requirements and regulatory frameworks of these areas (Philips, 2023, p. 22, 23).

3.1.9. How the company's internationalization has influenced its adoption of ce practices

Philips' internationalization strategy has been crucial in incorporating Circular Economy (CE) techniques throughout its global operations, motivated by the necessity to adhere to differing regulatory frameworks and satisfy varied consumer demands. This reflects Institutional Theory, which highlights the influence of coercive pressures (regulatory requirements) and cultural pressures (consumer expectations) on organizational behavior and practices (DiMaggio & Powell, 1983). Philips has customized its CE procedures to conform to local market realities in places such as North America, Greater China, and Europe, incorporating region-specific solutions that comply with local environmental criteria and address consumer preferences. This localized adaptation fosters the circular economy at a local scale, aligning with the Natural-Resource-Based View (NRBV) principle of leveraging internal capabilities, such as dynamic capabilities, to adapt to varying external conditions (Hart, 1995).

By means of globalization, Philips has benchmarked against global sustainability best practices, adopting and modifying the most effective circular economy solutions from various locations. This strategy reflects mimetic isomorphism from Institutional Theory, where organizations emulate best practices from peers to reduce uncertainty and enhance legitimacy (DiMaggio & Powell, 1983). Philips' global presence enables the company to acquire knowledge from varied regulatory frameworks and customer behaviors, incorporating these insights into a more resilient and comprehensive CE strategy. This aligns with the dynamic capabilities concept of the NRBV, which emphasizes the need for firms to adapt and reconfigure resources to address evolving environments (Teece, Pisano, & Shuen, 1997).

Philips has proactively enhanced its worldwide supply chain to swiftly respond to fluctuations in demand and supply, a vital factor for avoiding waste and decreasing resource consumption fundamental tenets of the circular economy. This practice embodies the "R-Imperatives", as identified by Reike, Vermeulen, & Witjes (2018), focusing on eliminating waste production by optimizing material usage per unit. The company's worldwide manufacturing presence bolsters its capacity to execute Circular Economy practices efficiently by utilizing local innovations and collaborations to boost resource efficiency and reduce environmental impact. This connects to pollution prevention strategies under the NRBV, which highlight the financial and environmental benefits of reducing waste and emissions at the source (Hart, 1995).

Furthermore, the international scope of Philips' operations has heightened its focus on Environmental, Social, and Governance (ESG) matters, indicating the growing importance of these criteria to stakeholders worldwide. This is driven by coercive isomorphism, reflecting the necessity to comply with diverse international regulatory frameworks, such as the European Corporate Sustainability Due Diligence Directive, which mandates identifying and mitigating environmental impacts throughout the value chain (DiMaggio & Powell, 1983).

Philips' significant involvement in international organizations and partnerships, such as its collaborations with the World Economic Forum and the Ellen MacArthur Foundation, highlights its dedication to circular economy concepts. These partnerships exemplify normative isomorphism, where professional and industry networks drive the adoption of recognized environmental standards and best practices (DiMaggio & Powell, 1983). By participating in these collaborations, Philips enhances its capacity to align with global CE initiatives, integrating insights into its strategies and ensuring adherence to international benchmarks.

3.2. Unilever

3.2.1. Goals related to ce practices

By 2025, Unilever has set ambitious sustainability targets that reflect its commitment to minimizing environmental impact and fostering a circular economy. One of its primary objectives is to ensure that 100% of its plastic packaging is reusable, recyclable, or compostable, thereby addressing the global challenge of plastic waste and supporting

more sustainable consumption practices (Unilever, 2023, p. 76). In addition, the company aims to incorporate 25% recycled plastic into its packaging and collect and process more plastic than it sells, underscoring its focus on reducing the reliance on virgin plastic and promoting the use of recycled materials (Unilever PLC, 2023, p. 55). Furthermore, Unilever has committed to maintaining zero non-hazardous waste to landfill across its production sites, reflecting its dedication to reducing operational waste and enhancing waste management systems (Unilever PLC, 2023, p. 69).

3.2.2. Goals related to internationalization

Unilever's strategy emphasizes the allocation of resources to high-growth sectors, ensuring the corporation remains nimble and attuned to changing market demands. An essential component of this strategy is sustaining a robust pipeline of pertinent innovations through vigilant observation of customer data and emerging trends. This enables Unilever to swiftly adjust to short-term demand fluctuations while anticipating structural changes in the medium term. The corporation seeks to render its brands aspirational and promote premiumization throughout its varied product portfolio (Unilever PLC, 2023, p. 74).

The Agile Innovation Hub is important to Unilever's strategy, utilizing technology to collect customer information, discern patterns, and discover emerging demand areas. This allows Unilever to swiftly introduce trend-aligned innovations utilizing digital resources (Unilever PLC, 2023, p. 253).

Unilever is leveraging the hyper-fragmentation of channels as technology transforms distribution methods, with the rapid expansion of e-Commerce and Modern Trade offering substantial prospects for commercial growth. The corporation acknowledges the necessity to improve its e-Commerce and e-RTM (Route-to-market) capabilities to conform to the swift digitization of consumer purchase patterns. Through the strategic design and impeccable execution of e-RTM, B2B solutions, and a comprehensive E2E Supply Chain transformation, Unilever seeks to capitalize on developing digital channels to foster future business success. (Unilever Limited, 2024, p. 57).

3.2.3. Sustainability certifications

Unilever's Environmental Care Framework is founded on ISO 14001 standards, guaranteeing that its activities conform to globally acknowledged environmental management regulations. The Forest Stewardship Council (FSC) accreditation ensures

that products originate from sustainably managed forests that provide environmental, social, and economic advantages. The Rainforest Alliance certification is granted to farms, forests, and enterprises that adhere to rigorous environmental and social criteria (Unilever Limited, 2024, p. 81).

3.2.4. CE Initiatives

1. Refuse:

Unilever has eliminated plastic from all soap cartons and has eliminated coal from its operations.

2. Reduce:

Unilever has reduced its use of virgin plastic by 18% since 2019 (Unilever PLC, 2023, p. 65).

Additionally, Unilever prioritizes the minimization of virgin plastic in its packaging materials by integrating sustainable alternatives. Moreover, the company aims to reduce the use of hazardous chemicals by upgrading hardware with cutting-edge technology and eliminating harmful ingredients in cleaning and disinfection procedures (Unilever Limited, 2024, p. 78).

3. Resell/Re-Use

Unilever has implemented several pilot programs for refill stations in diverse countries to advocate for sustainable packaging. In the UK, the corporation has introduced refill stations to promote enduring consumer practices around reusable packaging. Ninety-four percent of UK consumers prefer refills to new product purchases when available, and eighty-nine percent are more willing to purchase items with reusable packaging (Unilever, 2021).

4. Repair:

For this particular R-principle, Unilever does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

5. Refurbish:

For this particular R-principle, Unilever does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

6. Remanufacture:

For this particular R-principle, Unilever does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

7. Repurpose:

For this particular R-principle, Unilever does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

8. Recycle Materials:

In 2023, Unilever achieved an actual recyclability rate of 53% for its plastic packaging portfolio (Unilever PLC, 2023, p. 41).

Moreover, Unilever collected and processed 61% of its global plastic packaging footprint in 2023. In Indonesia and Vietnam, Unilever's operations managed to collect and process more plastic than the company sold, by implementing physical collection initiatives and increasing the use of recycled plastic in packaging (Unilever PLC, 2023, p. 44).

Additionally, the company has established decentralized waste management initiatives that facilitate garbage collection, sorting, processing, and recycling. The Material Recovery Facilities (MRFs), comprising 7 active sites in Mumbai and Aurangabad, jointly recycle more than 5,000 metric tons of garbage each year (Unilever Limited, 2024, p. 66).

The company has increased the utilization of Post-Consumer Recycled (PCR) plastic in packaging for numerous products (Unilever Limited, 2024, p. 87).

9. Recover (energy):

Unilever converts wet waste into biogas, utilizing it as a source of renewable energy. The company also recovers energy from waste by ensuring the most efficient routes for waste flows. Additionally, Unilever has implemented initiatives to use sludge waste as

boiler fuel, aligning with its commitment to recover energy from waste by transforming it into a usable form of energy (Unilever Limited, 2024, p. 65, 99).

10. Re-mine: It means retrieving materials from landfills.

For this particular R-principle, Unilever does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

Not pertinent to a single category:

- A detailed standard operating procedure (SOP) exists for the safe handling and disposal of expired or damaged stock returned from the market and depots. These items are either securely discarded, recycled, or repurposed (Unilever Limited, 2024, p. 86).
- Unilever has attained zero non-hazardous waste to landfills status in all its plants and offices by optimizing the reuse and recycling of non-hazardous waste through ecologically sustainable methods (Unilever Limited, 2024, p. 99).
- The company has pledged to utilize exclusively reusable, recyclable, or compostable plastic packaging (Unilever Limited, 2024, p. 87).

3.2.5. Energy efficiency

Unilever has completely shifted to use 100% renewable electricity, derived from solar and wind energy, along with IREC green certification. This transition has markedly advanced the company's environmental objectives, achieving a 98% decrease in per tonne greenhouse gas (GHG) emissions and a 45% reduction in energy usage in its manufacturing processes relative to the 2008 baseline. Building on this progress, the company has implemented several energy-saving measures, including heat pumps, energy-efficient motors, and Variable Voltage and Frequency Drive (VVFD) systems. These strategies reduce total energy consumption in their factories. Unilever has implemented an energy management system that facilitates real-time monitoring of energy consumption, allowing the corporation to promptly detect and rectify any energy losses during manufacturing (Unilever Limited, 2024, p. 101).

To advance its renewable energy objectives, Unilever has instituted direct procurement agreements with small-scale hydropower initiatives, alongside large-scale hydro, wind, solar, and geothermal energy sources in areas where it does not produce its own

renewable electricity. This strategy guarantees a dependable and sustainable energy supply throughout the company's worldwide operations (Unilever Limited, 2024, p. 47).

3.2.6. Internal resources and capabilities (NRBV Analysys)

The implementation of Lifecycle Assessments (LCA) for evaluating the environmental impact:

Unilever performs Life Cycle Assessments (LCA) on its goods via its parent company, Unilever plc, utilizing either internal LCA specialists or external collaborators, in accordance with ISO 14040 standards. The corporation conducts a yearly simplified Life Cycle Assessment (LCA) on sample products in 14 countries, including India, utilizing a technique endorsed by the UNEP as one of the premier organizational LCAs. In 2022, Unilever employed a streamlined Life Cycle Assessment to delineate the carbon footprint of its products, facilitating the identification of critical difficulties in attaining Net Zero emissions from sourcing to point of sale. In this context, Unilever prioritizes its Scope 3 emissions, which constitute the predominant portion of the company's total emissions footprint. These emissions originate chiefly from the procurement and manufacturing of raw materials, especially for commodities with significant environmental hazards, including palm oil, paper and board, tea, soy, and cocoa. The environmental implications of these items are significantly affected by factors such as deforestation and agricultural methods. Unilever is concentrating on procuring resources that comply with stringent sustainability criteria, including no-deforestation and no-peat land-use palm oil, to alleviate the environmental repercussions linked to these essential commodities (Unilever Limited, 2024, p. 86).

Environmental Management System (EMS)

At every Unilever location, a trained and certified Environment, Health, and Safety (EHS) representative is tasked with overseeing the comprehensive execution of the site's environmental management system. Their responsibilities encompass ensuring adherence to environmental performance requirements and fostering transparent communication with regulatory bodies and local populations (Unilever Limited, 2024, p. 100).

Unilever's ESG governance framework incorporates sustainability into the company's overarching business plan. The Board of Directors is ultimately accountable for risk management, although an ESG Committee has been formed to supervise the

governance of the company's Environmental, Social, and Governance (ESG) practices and associated risks. This framework guarantees that sustainability is a primary emphasis and is efficiently administered throughout the organization (Unilever Limited, 2024, p. 119).

Strategy for addressing social issues and Base of the Pyramid (BoP)

Initiated by Unilever in 2001, Project Shakti seeks to empower rural women in India while enhancing the company's penetration into rural areas. The initiative educates women, referred to as "Shakti Ammas," to serve as direct-to-consumer sales representatives for Unilever products. These women undergo training in product knowledge, sales strategies, and fundamental business skills, empowering them to secure a consistent income. Thus far, the project has effectively empowered over 200,000 women across more than 15 states in India. Project Shakti enables Unilever to expand its distribution network into inaccessible rural regions, enhancing market penetration and concurrently elevating the quality of life for rural consumers (Unilever Limited, 2024, p. 93).

The Prabhat initiative, established in 2013, emphasizes sustainable community development in proximity to Unilever's manufacturing facilities in India. Prabhat aims to enhance communities by social, economic, and environmental initiatives. The project manages 18 livelihood centers that provide vocational training in fields including information technology, electrical work, plumbing, tailoring, and beauty services. These facilities have provided skill development training to roughly 130,000 persons, with over 75,000 attaining jobs. Besides vocational training, Prabhat aids small and marginal farmers, particularly women, through agricultural value chain projects, fostering sustainable development and local empowerment (Unilever Limited, 2024, p. 65).

Proactive Framing and Managerial Cognition and Cross-functional coordination within the firm

Unilever embeds sustainability within its fundamental business strategy, prioritizing the management of Environmental, Social, and Governance (ESG) risks. The company has formed an ESG Committee at the Board level to adequately handle these concerns, ensuring that ESG matters receive appropriate attention and resources. Furthermore, Unilever improves its governance by establishing cross-functional steering groups responsible for advancing the company's ESG objectives. Unilever is committed to

illustrating that robust financial performance and sustainable business practices are not only compatible but also mutually reinforcing, underscoring the company's dedication to responsible and lucrative growth (Unilever Limited, 2024, p. 29, 57).

Adapting to Technological Uncertainty

Unilever has designated 9.5% of its R&D expenditures for the advancement of technologies that enhance the environmental and social effects of its goods and processes. In the past year, the company has focused on multiple environmental activities, such as Deforestation-Free Palm efforts, converting non-recyclable plastics to recyclable alternatives, and mitigating greenhouse gas emissions through various eco-design projects. Furthermore, Unilever allocated 25% of its capital investment to technologies aimed at improving the environmental and social effect of its operations. This investment facilitated various sustainability initiatives, including the installation of machinery to substitute palm fatty acids with starch, the implementation of heat pumps for hot water applications, the utilization of magnetic chillers, the expansion of solar and wind energy infrastructure, and the enhancement of water conservation and harvesting efforts. These investments correspond with Unilever's overarching dedication to sustainable growth and responsible innovation (Unilever Limited, 2024, p. 85).

Innovation in clean technologies

Unilever has collaborated with Tuticorin Alkali Chemicals and Fertilizers Limited (TFL) and Carbon Clean Solutions Limited (CCSL) to create technologies that capture CO2 from energy consumption in production processes and transform it into a form of soda ash with markedly reduced greenhouse gas (GHG) emissions relative to conventional methods (Unilever Limited, 2024, p. 86).

Unilever has incorporated several polymer technologies in its product innovation initiatives to improve the cleaning, foaming, and whitening efficacy of its fabric care products. These technologies enhance product efficiency while prioritizing sustainability. The company has included ecologically friendly biosurfactant technologies into formulas like dishwashing solutions, thereby reinforcing its sustainability objectives (Unilever Limited, 2024, p. 62).

To further its objective of attaining net-zero emissions by 2039, Unilever is creating next-generation sustainable materials with a reduced carbon impact (Unilever Limited, 2024, p. 47).

The corporation has implemented substantial measures in water conservation via diverse stewardship initiatives in 12 water-scarce regions in India. These efforts seek to enhance water efficiency through rainwater gathering and groundwater recharging. Unilever has implemented recharging wells equipped with filtration machines and established an 11,000 KL storage facility at one of its factories to facilitate these initiatives. In accordance with its environmental emphasis, Unilever has implemented robotic systems for the dry cleaning of solar panels, a method that preserves solar energy efficiency without use water. This innovation is essential for water-scarce areas, guaranteeing the efficacy of solar systems while preserving precious water resources (Unilever Limited, 2024, p. 101).

Fringe Stakeholder Engagement

Initiatives that are designed to inform environmental groups and local communities about sustainable products and practice:

Unilever's Project Prabhat, a sustainable community effort, has been diligently executing water conservation initiatives in water-scarce regions nationwide, with a pronounced focus on guaranteeing water security. The effort has enhanced water accessibility by erecting many water conservation infrastructures, including check dams, farm ponds, farm bunds, and water absorption trenches in designated communities. The program not only enhances water availability but also aids agricultural communities by providing solutions that increase water efficiency, hence promoting more sustainable farming practices (Unilever Limited, 2024, p. 101).

Unilever is dedicated to the sustainable procurement of agricultural raw materials while safeguarding and restoring nature. The company has been imparting its knowledge of sustainable agriculture practices to its farmer partners. These initiatives have resulted in enhanced soil quality, elevated crop yields, and subsequently, greater farmer incomes, demonstrating Unilever's commitment to environmental sustainability and community welfare (Unilever Limited, 2024, p. 48).

Initiatives that are designed to inform consumers and employees about sustainable products and practices:

Start A Little Good is a door-to-door behavioral modification initiative initiated by Unilever, advocating for the classification of waste into dry, moist, and hazardous categories among homeowners. Unilever has partnered with Xynteo to develop an interactive curriculum named 'Trash No More' aimed at promoting waste segregation and recycling habits from a young age. This digital curriculum aims to educate students on the need of waste segregation and recycling, hence promoting lasting behavioral change (Unilever Limited, 2024, p. 48, 66).

Unilever is committed to fostering sustainability awareness across the firm. The firm has implemented comprehensive training and awareness programs for its Board of Directors, Key Managerial Personnel, workers, and laborers. The objective of these programs is to ensure that all organizational members are sufficiently informed and actively engaged in Unilever's sustainability initiatives (Unilever Limited, 2024, p. 83).

Promoting Circular Economy practices through collaboration with regulators:

Unilever has implemented sustainable comprehensive waste management initiatives that include garbage collection, segregation, processing, and recycling. These initiatives are executed in partnership with the Brihanmumbai Municipal Corporation (BMC), State Bank of India, Aurangabad Municipal Corporation (AMC), United Nations Development Programme (UNDP), and Xynteo, with UNDP and Xynteo acting as Unilever’s design, monitoring, and evaluation collaborators. Presently, seven active Material Recovery Facilities (MRFs) five located in Mumbai and two in Aurangabad recycle more than 5,000 metric tonnes of waste per year (Unilever Limited, 2024, p. 66).

Unilever is collaborating with governmental and industrial organizations to create packaging alternatives and implement a National Framework for Extended Producer Responsibility (EPR). This collaboration aims to synchronize legislation on plastic waste management between national and state agencies and improve the recycling infrastructure for plastics (Unilever Limited, 2024, p. 55).

To advance reuse-refill models, Unilever collaborates with entities such as the Ellen MacArthur Foundation and the Consumer Goods Forum to champion systemic alterations that enhance the scalability and economic feasibility of these models.

Unilever is contributing to the World Economic Forum's Consumers Beyond Waste effort to establish a standardized methodology for measuring and reporting reuse, which will inform future legislation. Moreover, Unilever is promoting a worldwide plastics treaty, acknowledging that voluntary initiatives are inadequate to tackle the plastic waste catastrophe and urging for extensive global measures to solve the problem (Unilever Limited, 2024, p. 48).

Moreover, Unilever is jointly financing a second Life Cycle Assessment (LCA) concerning sustainable palm oil and the World Foods Life Cycle Database Initiative. Unilever, as a sponsor of the United Nations Environment Programme (UNEP) Life Cycle Initiative (LCI), is dedicated to promoting the application of Life Cycle Assessment (LCA) in policymaking and decision-making processes (Unilever Limited, 2024, p. 86).

Barriers preventing adoption of CE practices

Supplier resistance to change constitutes a substantial obstacle to the implementation of Circular Economy (CE) practices. Life Cycle Assessments (LCAs) indicate that Scope 3 emissions, encompassing emissions from raw material procurement and manufacture, significantly contribute to Unilever's total carbon footprint. This underscores the difficulty of adopting more sustainable practices throughout the supply chain, necessitating collaboration and dedication from suppliers who may oppose change. The intricacy of resolving these difficulties highlights the necessity for extensive implementation of sustainable practices to diminish the overall life cycle impact of Unilever's products (Unilever Limited, 2024, p. 86).

3.2.7. Externall pressures (Institutional Theory)

Adherence to international environmental regulations and standards:

Water (Prevention and Control of Pollution) Act: Unilever ensures compliance with this regulation, established by the Indian government, as part of their broader efforts to manage environmental impacts such as water withdrawal, consumption, and discharge in water-stressed areas (Unilever Limited, 2024, p. 100).

Air (Prevention and Control of Pollution) Act: This Indian regulation requires Unilever to implement air pollution control systems to mitigate emissions and consistently assess air quality to ensure adherence to established standards. The company must disclose pollutant levels and retain records for regulatory review (Unilever Limited, 2024, p. 100).

Environmental Protection Act: Unilever is obligated under this Indian act to adhere to standards concerning waste disposal, emission thresholds, and the management of hazardous materials. Regular monitoring and comprehensive reporting of environmental compliance are integral to meeting these requirements (Unilever Limited, 2024, p. 100).

Hazardous and Other Wastes (Management and Transboundary Movement) Regulations: As per this Indian regulation, Unilever aligns its waste management practices with guidelines issued by the State Pollution Control Board. The company ensures proper handling and disposal of hazardous waste, maintains detailed records, discloses waste management techniques, and submits an annual compliance report (Unilever Limited, 2024, p. 99).

International standards:

United Nations Global Compact (UNGC): Unilever's Code of Business Principles (CoBP) is consistent with the directives of the UNGC. This pledge underscores their adherence to upholding globally recognized values in human rights, labor standards, environmental sustainability, and anti-corruption procedures. By adhering to the UNGC principles, Unilever demonstrates its commitment to responsible business practices, guaranteeing ethical and sustainable operations across its global value chain (Unilever Limited, 2024, p. 80).

Market expectations and Societal demands

Consumers and customers are increasingly concerned about the environmental impact of products, particularly with plastic waste. Unilever is augmenting the recyclability of its packaging and facilitating the advancement of superior recycling infrastructure worldwide. These measures are essential for satisfying increasing market demands and assuring adherence to new regulations, so assisting the organization in evading potential financial penalties or market share erosion (Unilever Limited, 2024, p. 55, 71).

Unilever has noted an increasing tendency among consumers who want brands that meet their functional requirements while also possessing a distinct social or environmental mission. In response, Unilever's Research and Development team diligently endeavors to convert these evolving consumer desires into cutting-edge technology for forthcoming items. This proactive strategy enables the organization to remain agile and respond promptly to swiftly changing consumer trends, guaranteeing

alignment with market demands and sustainability objectives (Unilever Limited, 2024, p. 54, 104).

3.2.8. Internationalization strategy

Markets

In 2023, Unilever recorded a revenue of €26,234 million in the Americas, €21,531 million in Europe, and €11,839 million in Asia Pacific, Africa, and other regions (Unilever PLC, 2023, p. 185).

Emerging markets, representing 58% of Unilever's total revenue, experienced an 8.5% growth in underlying sales, propelled by a 1.6% increase in volume and a 6.9% gain in price. Latin America, Turkey, and Africa recorded double-digit growth, but India achieved mid-single-digit growth driven by volume, although experiencing negative pricing in the fourth quarter attributed to reduced input costs. In China, sales increased by low-single digits, propelled by volume, although market recovery was gradual and inconsistent. The expansion in Southeast Asia was hindered by a decrease in sales in Indonesia during the fourth quarter, as customers distanced themselves from global brands due to the geopolitical circumstances in the Middle East (Unilever PLC, 2023, p. 15).

In developed markets, accounting for 42% of Unilever's revenue, underlying sales increased by 4.8% for the year, driven by a 6.7% rise in prices, counterbalanced by a 1.8% decrease in volume. North America experienced robust growth of 5.8%, comprising 2.5% from volume and 3.3% from price, bolstered by sustained double-digit sales increases in Prestige Beauty and Health & Wellbeing. Volume growth in North America intensified over the year, resulting in a 6.3% increase in the fourth quarter. In Europe, underlying sales growth was 4.1%, propelled by a 12.8% price escalation, indicative of the region's heightened exposure to categories experiencing substantial cost inflation, while volume decreased by 7.7% (Unilever PLC, 2023, p. 16).

3.2.9. How the company’s internationalization has influenced its adoption of CE practices

Operating in 190 countries, Unilever has implemented a flexible strategy for Circular Economy (CE) practices, tailoring its initiatives to align with local regulatory standards and consumer demands while utilizing its global size for efficient CE tactics. This reflects Institutional Theory, specifically coercive pressures, as Unilever adapts to local regulatory standards to maintain legitimacy (DiMaggio & Powell, 1983). An exemplary

illustration of this global-local strategy is Unilever's pledge to ensure that all its plastic packaging is reusable, recyclable, or compostable by 2025. This aligns with the "R-imperatives", which emphasizes minimizing reliance on virgin materials (Reike, Vermeulen, & Witjes, 2018).

In 2017, Unilever launched refill options for its Rexona body wash line in Brazil and Dove shampoo in India. The introduction of super-concentrated refills for OMO laundry detergents in Brazil, which decreased plastic consumption by 75%, highlights the pollution prevention capability from the NRBV framework, which focuses on reducing waste at its source (Hart, 1995). Similarly, the pilot in-store dispensing machines for Skip and Persil laundry detergents in France illustrates Unilever's capacity to innovate within circular product design principles, a concept tied to dynamic capabilities under the NRBV (Teece, Pisano, & Shuen, 1997).

Unilever's engagement with varied regulatory frameworks in its global operations profoundly influences its corporate environmental strategies, consistent with coercive isomorphism, as companies align with external pressures such as regulatory compliance to gain legitimacy (DiMaggio & Powell, 1983). The corporation's support for international agreements, like the UN treaty on plastic pollution, aligns with efforts to harmonize legislation globally, enabling the establishment of a circular market for plastics (Zhu, Sarkis, & Lai, 2007). The global reach of Unilever's operations necessitates the enhancement of its supply chains to adopt a more circular model. The company's efforts to ensure that the materials utilized in its goods, particularly plastics, conform to Circular Economy principles highlight the product stewardship capability, which extends sustainability efforts across the product lifecycle (Hart, 1995).

3.3. IKEA

3.3.1. Goals related to CE practices

IIKEA aims to achieve a circular business model by 2030, focusing on designing all goods with circular possibilities. The company intends to utilize exclusively renewable or recycled resources and offer creative solutions that enable customers to prolong the lifespan of their goods and materials (Inter IKEA Systems B.V., 2024, p. 16).

IKEA's methodology include creating each product from inception to be reusable, refurbishable, remanufacturable, and ultimately recyclable, adhering to circular product design concepts throughout the development process. IKEA is dedicated to converting

trash into resources, aiming to eliminate landfill waste entirely (Inter IKEA Systems B.V., 2024, p. 17).

A primary objective is to eliminate single-use plastics in consumer packaging by 2028, and by fiscal year 2025, IKEA intends to introduce all new goods in its home furnishing line without plastic packaging. The company aims to achieve a minimum of 80% recycled aluminum content in its products by 2030. By that year, a minimum of one-third of IKEA's wood-based products will consist of recycled wood, thereby enhancing its circularity and sustainability initiatives (Inter IKEA Systems B.V., 2024, p. 20, 42).

3.3.2. Goals related to internationalization

IKEA aims to enhance its global footprint by establishing additional customer meeting points. This entails the launch of nearly 70 new small-format stores and plan & order terminals in diverse metropolitan locales, including Madrid, Rome, Surabaya, San Francisco, and Toronto, thereby enhancing the accessibility of IKEA's products to a wider demographic. Alongside these advances, IKEA is poised to penetrate new markets, specifically Colombia and New Zealand. The company intends to inaugurate its inaugural store in Colombia and commence retail operations in New Zealand by late 2025, thereby enhancing its global presence (Inter IKEA Holding B.V., 2023, p. 11).

3.3.3. Sustainability certifications

IKEA engages with the Forest Stewardship Council (FSC) to guarantee that its wood is sourced from FSC-certified or recycled resources, thereby promoting responsible forest management. Furthermore, as a participant in the Aluminum Stewardship Initiative (ASI), IKEA aids in the accreditation of supply chains, emphasizing recycled content and chain of custody certification for aluminum smelters. IKEA engages in the Responsible Minerals Initiative (RMI), which guarantees the ethical procurement of minerals and tackles social and environmental ramifications within the mineral supply chain. The World Resources Institute (WRI) acknowledged IKEA for effectively reducing food waste by fifty percent, in accordance with Sustainable Development Goal (SDG) 12.3 (Inter IKEA Systems B.V., 2024, p. 20, 31, 41).

3.3.4. CE initiatives

1. Refuse:

For this particular R-principle, IKEA does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

2. Reduce:

As a result, compared to 2021, IKEA has reduced the amount of plastic packaging used for consumer goods by approximately 47% and in total packaging (including consumer packs, multipacks, unit loads, and handling materials) by approximately 44% (Inter IKEA Systems B.V., 2024, p. 20).

IKEA's design thinking considers many aspects like choosing the most suitable materials, always aiming to do more with less, and optimizing manufacturing methods while designing on the factory floor (Inter IKEA Systems B.V., 2024, p. 16).

3. Resell/Re-Use

Through Buyback & Resell, customers in 28 markets can bring back IKEA furniture to one of its stores and receive a voucher to spend in-store or online. A majority of returned items are resold via its As-Is areas. Any items not resold are recycled or donated to local community projects. Over 211,600 customers used the service in 2023 (2022: 105,000) and gave 430,000 (2022: 230,000) items a second life (Inter IKEA Systems B.V., 2024, p. 19).

4. Repair:

In Norway, IKEA is trialing a new partnership with the municipality of Oslo to create a dedicated collection point for unwanted IKEA furniture at the Haraldrud municipal recycling centre. Returned IKEA furniture will be checked, cleaned, and resold in IKEA's As Is areas (Inter IKEA Systems B.V., 2024, p. 19).

5. Refurbish:

This year, IKEA piloted a new initiative in Belgium, Germany, and the Netherlands that encourages its customers to bring back products filled with down and feathers, that are no longer being used, for recycling into GULKAVLE pillows and FJÄLLBRÄCKA duvets (Inter IKEA Systems B.V., 2024, p. 18).

6. Remanufacture:

For this particular R-principle, IKEA does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

7. Repurpose:

In 2023, IKEA Taiwan collaborated with range development to repurpose curtains unfit for sale or returned from customers by using their fabric to create tote bags, illustrating a practical approach to sustainable production. Building on this initiative, launched in 2023, the SILVERSIDA product series represents the first example of how IKEA is successfully using ceramic production waste to make new tableware. SILVERSIDA products are made up of 65-70% internal factory waste. Moreover, products in IKEA's range, such as the BÄRFIS over the door hook rack, are made of the offcut material from the BLANDA bamboo bowl (Inter IKEA Systems B.V., 2024, p. 20).

8. Recycle Materials:

In 2023, IKEA's plastic products produced in Europe contain at least 70% recycled content, with more than half sourced from post-consumer materials such as household plastic waste. The same journey is ongoing in other production regions, resulting in a reduction of CO2 emissions on a material level by approximately 60% compared to products made entirely from fossil virgin plastic (Inter IKEA Systems B.V., 2024, p. 19).

During 2023, IKEA made significant progress by reaching 77% recycled aluminum content in its products, up from 57% in 2022. In 2023, the share of recycled content in the particle board used was 30%, and 0.3% in fiberboards. In addition to these achievements, throughout 2023, IKEA focused on transitioning to steel manufacturers with the technical capabilities to utilize a greater share of recycled content, which also reduces the climate footprint in production (Inter IKEA Systems B.V., 2024, p. 42, 43).

9. Recover (energy):

For this particular R-principle, IKEA does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

10. Re-mine:

For this particular R-principle, IKEA does not have any reported initiatives or practices that align with or contribute to this aspect of the Circular Economy, as per the available data reviewed in this study.

Not pertinent to a single category:

• During 2023, IKEA provided 23.2 million assembly parts (2022: 21.5 million) to enable customers to prolong the life of their products. The company also continued working on solutions to provide furniture spare parts for customers, with the aim of offering easy, convenient, and affordable solutions (Inter IKEA Systems B.V., 2024, p. 19).

• Moving from recycled polyethylene terephthalate (PET) to recycled polypropylene (PP) in IKEA's UPPDATERA products (consisting of multi-use plastic boxes) lowered CO2 emissions on a material level by approximately 12% (Inter IKEA Systems B.V., 2024, p. 19).

• In 2023, IKEA continued working with its Five Main Fractions methodology where all production units analyze their situation and focus on five fractions: the largest volume, the most hazardous one, mixed fraction, the most expensive, and fractions to landfill. Each factory prioritizes and sets up a plan on how to act, test, and evaluate ways to minimize, reuse, recycle, or send waste to energy recovery (Inter IKEA Systems B.V., 2024, p. 20).

• The "Save the Furniture" project by focus on encouraging the reuse, repair, and recycling of furniture, essentially aiming to reduce the amount of furniture ending up in landfills, which constituted about 4% of solid waste. The underlying concept is to extend the lifecycle of products by facilitating consumer participation in a secondary market for used furniture (Río González, Kiefer, Carrillo-Hermosilla, & Könnöla, 2021).

3.3.5. Energy efficiency

In 2023, IKEA's estimated climate footprint was 24.1 million tonnes CO2 eq, representing a 12% decrease compared to 2022 and a 22% reduction from the baseline set in 2016. This reduction is largely attributed to increased use of renewable electricity in both retail and production units, along with energy efficiency improvements in IKEA's lighting range, and lower production volumes (Inter IKEA Systems B.V., 2024, p. 25).

Moreover, in IKEA's retail and other operations, the share of renewable energy grew from 63% in 2022 to 69% in 2023, while renewable electricity usage rose from 75% to 77%. In production, the renewable electricity share increased significantly from 63% in 2022 to 71% in 2023, indicating substantial progress in shifting towards greener energy sources. Furthermore, for product transport, the use of alternative fuels like biogas and electricity increased from 6% to 10%, showing a steady improvement in the adoption of more sustainable fuel options. Additionally, in logistics service units such as warehouses, the share of renewable electricity grew from 86% to 90% (Inter IKEA Systems B.V., 2024, p. 25, 27).

3.3.6. Internal resources and capabilities (NRBV Analysis)

The implementation of Lifecycle Assessments (LCA) for evaluating the environmental impact:

IKEA's Life Cycle Assessment (LCA) process is essential to its sustainability initiatives, since it assesses the environmental impact of items across their entire life cycle. Emission factors are derived from credible sources and are consistently improved as IKEA enhances traceability and obtains original data from its material suppliers. Nevertheless, the existing LCA model does not comprehensively consider product design for recycling or the particular waste management infrastructure at each IKEA location. The LCA method adheres to internationally acknowledged standards, including the Greenhouse Gas (GHG) Protocol, guaranteeing that IKEA's sustainability strategy is both stringent and transparent. This alignment enables IKEA to uphold a high degree of environmental accountability while striving for enhancements in its LCA approach (Inter IKEA Systems B.V., 2024, p. 26).

Environmental Management System (EMS)

Since fiscal year 2013, all of IKEA's suppliers have been ISO 14001 certified, underscoring their dedication to environmental management. This particular qualification is no longer emphasized in current reports or on their website. (Inter IKEA Systems B.V., 2015, p. 50)

Strategy for addressing social issues and Base of the Pyramid (BoP)

IKEA's approach to social concerns prioritizes social entrepreneurship and ethical pay practices. IKEA collaborates with social enterprises to assist neglected communities and

generate significant employment possibilities. In 2023, IKEA collaborated with 12 social enterprises, employing more than 11,000 individuals from marginalized communities. Initiatives such as the Displaced Talent Programme offer direct work to forcibly displaced individuals, facilitating their social and economic advancement. An illustration of IKEA's incorporation of sustainability into its supply chain is the collaboration with Saahas Zero Waste. This relationship fosters sustainable waste management techniques and empowers base-of-the-pyramid communities by creating jobs and bolstering local economies. IKEA upholds stringent environmental standards and advocates for resource efficiency, illustrating that sustainability and social responsibility are fundamental to its operations. ((IKEA Social Entrepreneurship, 2023)

Proactive Framing and Managerial Cognition and Cross-functional coordination within the firm

The Strategic Sustainability Council of IKEA establishes the overarching direction for the company's sustainability initiatives, encompassing its goals and commitments. The council, hosted and led by Inter IKEA Systems B.V., is chaired by the CEO of Inter IKEA Group and comprises representatives from both Inter IKEA Group and its franchisees. This framework guarantees coherence on environmental objectives throughout the IKEA franchise network, while permitting each franchisee to retain its autonomy. Moreover, the council is essential in guaranteeing that sustainability goals are integrated and uniformly implemented throughout the organization. In line with this governance structure, sustainability governance at IKEA is incorporated into every facet of the company's business activities, using a comprehensive approach. Each component of IKEA supports its comprehensive environmental initiative. Additionally, regular sustainability working groups, comprising specialists from both Inter IKEA Group and franchisees, convene to synchronize strategic efforts and guarantee the successful implementation of IKEA's sustainability policy. This interdisciplinary collaboration allows IKEA to achieve its environmental goals through unified efforts throughout the firm (Inter IKEA Systems B.V., 2024, p. 4, 57).

Adapting to Technological Uncertainty

At the time of this study, there were no identifiable or documented initiatives specifically addressing how IKEA adapts to technological uncertainty within the available data.

Innovation in clean technologies

In 2023, IKEA noted positive initiatives from suppliers in Europe and Asia aimed at decarbonizing thermal energy consumption in production plants. This involved the increased use of heat pumps to replace natural gas and steam sourced from fossil fuels in various production processes. Moreover, IKEA has launched a EUR 100 million financing initiative to encourage the on-site production of renewable energy. This program offers subsidized loans to IKEA suppliers, enabling their investment in projects that advance the shift to 100% renewable energy. Since its establishment in 2019, about EUR 33 million of the allocated funds have been assigned to approved applications. Building on these efforts to reduce emissions, IKEA has introduced a significant breakthrough by adopting bio-based substitutes for glue in board manufacturing, targeting a 40% reduction in fossil-based glue consumption by the fiscal year 2030. For instance, a facility of IKEA Industry in Lithuania has adopted a bio-based glue solution using technical starch derived from maize, significantly diminishing the climate impact of IKEA's manufacturing processes firm (Inter IKEA Systems B.V., 2024, p. 27).

Moreover IKEA launched the ÅBÄCKEN mist nozzle in 2023, promoting water saving for households. This mist nozzle, offered in all IKEA markets starting October 2022, allows consumers to reduce bathroom tap water consumption by up to 95%. IKEA is investing in the development of a water recycling shower solution that operates within a closed-loop system. This innovative technology aims to conserve up to 80% of water and reduce energy consumption by 70% compared to conventional showers, furthering IKEA's commitment to clean technologies and sustainable solutions (Inter IKEA Systems B.V., 2024, p. 11).

Fringe Stakeholder Engagement

Initiatives that are designed to inform environmental groups and local communities about sustainable products and practice:

In 2023, IKEA and the WWF sustained their enduring collaboration, which has emphasized responsible forest management for more than two decades. This global alliance, operating in 19 sites, has been crucial in fostering transparency in wood supply chains and safeguarding ecosystems. IKEA is commencing projects in South America for the first time, notably in Brazil and Colombia, focusing on community forest management, landscape conservation, and restoration activities. In the same year, WWF-India, with the help of IKEA, established three biodiversity parks in India as part

of an endeavor to restore cotton ecosystems using regenerative agricultural practices. These initiatives assist pollinators and enhance circumstances for local populations by increasing cotton fiber output, so promoting environmental sustainability and economic prosperity (Inter IKEA Systems B.V., 2024, p. 32, 36).

In 2023, IKEA reaffirmed its collaboration with the Ellen MacArthur Foundation, this partnership will persist in emphasizing the acceleration of the transition to a circular economy, with both entities exchanging information and experiences to facilitate transformation in this domain (Inter IKEA Systems B.V., 2024, p. 20).

Initiatives that are designed to inform consumers and employees about sustainable products and practices:

IKEA has initiated multiple programs to educate consumers and workers regarding sustainable products and practices. A primary project is the worldwide "energy conservation campaign," which aims to enhance knowledge regarding energy-saving techniques. This program equips customers with practical knowledge and resources to promote sustainable practices at home, enabling them to diminish their environmental footprint through enhanced energy efficiency (Inter IKEA Systems B.V., 2024, p. 9, 10).

IKEA underscores the significance of extending product longevity by providing readily available information to consumers and partners. In line with this objective, this project promotes the retention and transmission of items rather than their disposal, thereby fostering a circular economy. By adopting this approach, IKEA seeks to diminish waste and encourage sustainable practices through the promotion of responsible consumption and product maintenance, which aligns with its overarching dedication to environmental stewardship (Inter IKEA Systems B.V., 2024, p. 16, 17).

Promoting Circular Economy practices through collaboration with regulators:

In 2023, IKEA engaged in the EU Commission Expert Group/Multi Stakeholder Platform focused on the protection and restoration of global forests. IKEA provided significant insights into the formulation of laws, such as the EU Timber Regulation and the Forest Law Enforcement, Governance, and Trade (FLEGT) regulation, drawing from its expertise and empirical knowledge. IKEA also offered feedback on the Chapter 90 Rule for Products Containing Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in Maine,

USA, highlighting the necessity for a transparent and straightforward reporting method (Inter IKEA Systems B.V., 2024, p. 37, 45).

In June 2023, IKEA engaged in the European Business and Biodiversity Forum, organized by WWF-France, to deliberate on how both commercial and public sectors can adjust to changing biodiversity rules. The event emphasized the growing intricacy of reporting obligations and the imperative for firms to expedite their biodiversity initiatives (Inter IKEA Systems B.V., 2024, p. 32).

Furthermore, IKEA maintained its leadership in establishing new circular economy standards for the furniture sector through the CEN Technical Committee (TC207-WG10), which concentrates on furniture circularity. The European Standardisation Committee nominated an IKEA representative as the convenor to oversee the development of techniques for circular product design strategies. Additionally, IKEA actively supported policymakers by offering evidence-based insights as the EU Circular Economy Action Plan advanced. The company endorsed the legislative proposal for an Ecodesign for Sustainable Products Regulation and offered insights on essential design components to enhance circularity. IKEA also supported the incorporation of textiles, furniture, and mattresses in forthcoming EU rules. IKEA highlighted the necessity of establishing incentives to promote reuse and repair, updating the concept of "waste," and cultivating a scalable market for secondary raw materials. IKEA collaborated with the European Furniture Industries Confederation (EFIC) and EuroCommerce to engage in industry dialogues around ecodesign guidelines and the digital product passport, thereby solidifying its leadership in the transition to a circular economy (Inter IKEA Systems B.V., 2024, p. 32).

Barriers preventing adoption of CE practices

Implementing ethical sourcing in forest material supply chains poses a significant issue for IKEA and its diverse stakeholders, including subcontractors. Mapping these supply chains has proven particularly challenging, as some subcontractors were compelled to provide detailed information for the first time. This initiative has highlighted systemic barriers such as insufficient traceability mechanisms and a lack of standardized reporting processes across tiers of subcontractors. These limitations complicate efforts to achieve full transparency and hinder the seamless integration of CE practices. While many supply chains encompass only second-tier subcontractors, a select number

extend to the fifth tier, increasing the complexity of monitoring and managing sustainability standards throughout the network (Inter IKEA Systems B.V., 2024, p. 37, 38).

A significant challenge arises from fire safety laws in various regions, which often mandate assessments such as large open flame testing. These regulations require the use of chemical flame retardants, which, while meeting fire safety standards, limit the adoption of sustainable alternatives and hinder circular economy progress. Many of these flame retardants also pose risks to human health and the environment, including persistence in ecosystems and potential toxicity. These legislative constraints create a barrier to innovative, eco-friendly materials that could replace traditional flame retardants. For example, naturally fire-resistant materials or bio-based solutions often struggle to meet current regulatory criteria, stalling their widespread adoption. This challenge underscores the need for regulatory updates to align fire safety standards with sustainability objectives. In response, IKEA has actively advocated for reforms, such as revising the UK Furniture and Furnishing Fire Safety Regulations, to balance fire safety with chemical safety and sustainability. By pushing for these changes, IKEA aims to facilitate the transition to a regulatory framework that supports both consumer safety and environmentally responsible practices, enabling greater alignment with circular economy goals (Inter IKEA Systems B.V., 2024, p. 45).

3.3.7. External pressures (Institutional Theory)

Adherence to international environmental regulations and standards:

EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan and EU Timber Regulation (EUTR): The EUTR mandates that IKEA guarantees all wood entering the European Union is legally sourced, using obligatory due diligence procedures that include risk assessment and mitigation according to the product's characteristics and local circumstances. This policy is essential for curbing illicit logging and ensuring transparency in the wood supply chain. The FLEGT Action Plan seeks to address illicit logging and enhance governance in timber-exporting nations (Inter IKEA Systems B.V., 2024, p. 37).

European Union Deforestation-free Regulation (EUDR): This legislation will be implemented by 2025 and attempts to avoid deforestation by guaranteeing that commodities, including cattle, leather, and wood, are supplied without contributing to

deforestation. IKEA is implementing measures to guarantee adherence to the EUDR by establishing traceability and transparency throughout its supply chains, particularly for goods associated with deforestation, such as leather. The firm has instituted pilots and systems to comply with the regulation's stringent criteria (Inter IKEA Systems B.V., 2024, p. 40).

The Aquaculture Stewardship Council (ASC) standard: This certification ensures that the seafood sourced by IKEA adheres to rigorous requirements for sustainability, responsible aquaculture, and environmental conservation. These certifications assist IKEA in complying with its animal welfare and sustainability objectives across its supplier chains (Inter IKEA Systems B.V., 2024, p. 40).

The Corporate Sustainability Reporting Directive (CSRD) and European Sustainability Reporting Standards (ESRS): IKEA is planning to comply with CSRD regulations by performing its first Double Materiality Assessment (DMA) in 2023, which will be revealed in forthcoming sustainability reports. The firm is always striving to achieve complete compliance with the new CSRD regulatory criteria (Inter IKEA Systems B.V., 2024, p. 2, 3).

International standards:

Contextual Target Setting (CTS) Methodology: IKEA adopted CTS methodology recommended by WWF to address water scarcity in its supply chains. This method helps IKEA to manage water-related risks by setting targets for reducing water consumption in its operations and improving water stewardship in critical river basins (Inter IKEA Systems B.V., 2024, p. 33).

Global Reporting Initiative (GRI): GRI is one of the standards referenced by IKEA to ensure transparency and accountability in their sustainability reporting efforts, providing insights into their environmental and social impacts.

United Nations Global Compact: IKEA actively works to promote and respect human rights within its value chain, contributing to resilient societies by following the UN Guiding Principles on Business and Human Rights (UNGPs) (Our View on Protecting Human Rights - IKEA Global, n.d).

Market expectations and Societal demands

Regulatory requirements for firms to exhibit their environmental and social contributions are intensifying, especially with the implementation of the EU's Corporate Sustainability Reporting Directive (CSRD), effective from 2026. This directive mandates IKEA to disclose its ESG objectives and effects, ensuring that the company's success is evaluated not solely by financial development but also by beneficial outcomes for individuals and the environment. Alongside legal restrictions, public expectations for IKEA are more centered on sustainability and ethical business practices. The company has noted an increasing public need for businesses to emphasize sustainability and ethical sourcing, while also making sustainable living more accessible and affordable. IKEA has launched efforts like the Sustainable Living Shop to assist customers in embracing more sustainable lifestyles by providing products that encourage energy conservation, waste minimization, and healthier options. IKEA's "People & Planet Positive" sustainability approach addresses societal needs by striving to harmonize long-term profitability with beneficial social and environmental outcomes. This strategy corresponds with the increasing demand for corporate accountability, illustrating IKEA's dedication to fostering a brighter future while addressing the changing demands of its stakeholders (Inter IKEA Systems B.V., 2024, p. 3, 6).

3.3.8. Internationalization strategy

Markets

IKEA's internationalization strategy is intricately linked to its franchise model, which ensures financial stability while granting franchisees the autonomy to pursue new markets and concepts. This approach facilitates sustained growth by permitting franchisees to tailor the IKEA brand to regional requirements while upholding the company's fundamental principles and standards. The franchise model is essential to IKEA's international growth, providing franchisees with autonomy while maintaining monitoring along the value chain. As of 31 August 2023, twelve franchisees manage more than 600 IKEA customer meeting sites, encompassing classic shops, smaller outlets, pick-up locations, and various experimental models (Inter IKEA Systems B.V., 2024, p. 2, 4).

IKEA persistently invests significantly to enhance the brand's affordability, accessibility, and sustainability for customers globally, aiming to engage with 3 billion individuals. IKEA invests in innovative shopping methods, ecological practices, and a product

assortment that is consistently inspiring, functional, and economical (Inter IKEA Systems B.V., 2024, p. 9).

IKEA customizes its stores to address local requirements as part of its internationalization strategy. In Copenhagen, the shop was created to improve accessibility for cyclists and to accommodate the evolving behaviors of urban consumers, demonstrating IKEA's capacity to tailor its stores to align with local preferences and lifestyles (Inter IKEA Holding B.V., 2023, p. 11).

3.3.9. How the company's internationalization has influenced its adoption of CE practices

The relationship between IKEA's international expansion and its use of Circular Economy (CE) policies is essential to its worldwide operations. This connection reflects Institutional Theory, specifically coercive pressures, as IKEA aligns its strategies to address diverse regional environmental issues and legislation, integrating circular economy ideas into its fundamental business strategy (DiMaggio & Powell, 1983). IKEA's sustainability initiatives, including the incorporation of renewable energy in logistics and retail operations, as well as the pledge to utilize electric vehicles for home deliveries by 2025, align with the pollution prevention capability under the NRBV, which emphasizes reducing emissions at the source (Hart, 1995). The company's implementation of second-hand sales and buy-back programs in several countries corresponds with the "R-imperative", focusing on prolonging product life cycles and minimizing waste (Reike, Vermeulen, & Witjes, 2018). These initiatives, piloted in certain countries, have been extensively adopted as components of the company's overarching worldwide strategy (Fleming, 2021).

IKEA has created items that facilitate easy disassembly, recycling, and reuse, addressing dynamic capabilities under the NRBV framework, which highlight a firm's ability to adapt its resources and strategies to meet distinct rules and consumer expectations in various regions (Teece, Pisano, & Shuen, 1997). This approach ensures the uniform application of sustainability measures throughout the supply chain, strengthening the link between internationalization and circular economy concepts. The "Going beyond IKEA" project demonstrates how IKEA's global expansion facilitates the incorporation of circular economy ideas. This effort reflects normative isomorphism, as IKEA assumes broader responsibility for environmental impacts throughout its supply chain and customer demographic, moving beyond mere compliance with local

requirements to exhibit a profound dedication to circular economy principles (DiMaggio & Powell, 1983).

In markets where circular solutions are increasingly required or anticipated, IKEA's global position has compelled the company to develop responsibly. This is exemplified by the SOLSTRÅLE home solar offering, which aligns with the sustainable development capability of the NRBV, focusing on resource efficiency and addressing global challenges like renewable energy adoption (Hart, 1995). Internationalization exposes IKEA to varying degrees of market preparedness for sustainability, compelling the company to adopt a leadership role in advocating for circular economy ideas worldwide. The "Going beyond IKEA" effort prioritizes genuine emission reductions across many regions without dependence on carbon offsets, adhering to Circular Economy principles by concentrating on resource efficiency and reducing environmental impact globally (Reike, Vermeulen, & Witjes, 2018).

4. Discussion

4.1. Comparative analysis

4.1.1. Similarities

All three companies, Philips, Unilever, and IKEA, have set ambitious goals to promote circular economy (CE) practices, each with specific deadlines.

Philips aims to increase its circular revenues from 18.2% in 2022 to 25% by 2025, reflecting a rise of 6.8 percentage points in sales from goods, services, and solutions promoting circularity. The company achieved zero waste to landfill in 2022 and 2023, planning to maintain this and include all medical equipment by 2025. However, their Zero Waste to Landfill KPI excludes one-time waste and waste sent to landfills due to legal requirements. Philips also maintained 91% circular materials management in 2023, aiming for 95% by 2025, focusing on reducing virgin materials, increasing recycled and renewable resources, and designing products for recyclability and reuse.

Unilever aims to achieve ambitious sustainability goals by 2025, including ensuring that 100% of its plastic packaging is reusable, recyclable, or biodegradable and halving food waste in its operations. The company is committed to zero non-hazardous waste to landfill in its plants and integrating 15% recycled plastic into its products by 2025.

Unilever has pledged net-zero emissions for all goods from source to sale by 2039, aiming to cut product greenhouse gas emissions by 50% by 2030 and achieve zero emissions in operations by the same year. Additionally, it targets reducing virgin plastic usage by 30% by 2026 and 40% by 2028.

IKEA aims to transition to a fully circular business model by 2030, designing all products with circular capabilities and utilizing exclusively renewable or recycled resources. Additionally, the company seeks to offer solutions that enable customers to extend the lifespan of their goods and materials. Among its key objectives, IKEA plans to phase out single-use plastics in consumer packaging by 2028. Moreover, by 2025, it will introduce new home furnishing products with plastic-free packaging. By 2030, IKEA also aims to achieve at least 80% recycled aluminum content in its products and ensure that one-third of its wood-based products are made from recycled wood.

In terms of regulatory compliance, the companies examined adhere to similar international frameworks and have standardized their circular economy (CE) practices to ensure alignment with global and regional regulations. This standardization process is significantly influenced by external pressures, especially coercive isomorphism, where formal legal mandates and regulatory requirements drive the adoption of CE practices across their operations. Each company must comply with a range of regulations, such as those from the European Union, the United States, China and India. These regulatory frameworks not only create a uniform set of standards across industries but also encourage innovation by compelling companies to develop sustainable solutions to meet compliance.

Coercive pressures from regulatory bodies thus serve as a major driver for these firms to adopt CE practices, ultimately enhancing both environmental impact and competitive advantage. For example, the European Union mandates compliance with the Circular Economy Action Plan, enforcing waste reduction and promoting sustainable product design through directives like WEEE, RoHS, and the EcoDesign Directive. In the United States, regulations such as CERCLA and RCRA ensure proper waste management, while the Clean Air Act and Clean Water Act impose strict limits on emissions to encourage pollution control innovations. Similarly, China's Circular Economy Promotion Law requires companies to adopt greener manufacturing and waste reduction practices, supported by strict environmental regulations. In India, measures like the Extended

Producer Responsibility (EPR) framework, along with plastic and e-waste management rules, promote recycling and sustainable production processes, reinforced by the National Resource Efficiency Policy to reduce dependence on virgin materials.

Normative pressures play a pivotal role in encouraging organizations to adopt circular economy (CE) practices. Rooted in professional norms, industry standards, and the expectations of professional bodies, stakeholder groups, and society at large, these pressures drive organizations to conform to behaviors and practices considered appropriate or legitimate within their industry or professional sphere. Frequently, normative pressures manifest through sustainability certifications, which establish benchmarks for environmentally responsible practices.

Philips holds multiple sustainability certifications, including ISO 14001 accreditation for compliance with environmental management standards. The company's Annual Report is published with reasonable assurance from an independent auditor, covering financial, environmental, social, and governance (ESG) performance, positioning Philips as a leader in transparent and reliable ESG reporting. Furthermore, all suppliers are required to comply with the Supplier Sustainability Declaration (SSD) and the Restricted Substance List (RSL) as part of the Sustainability Agreement embedded in Purchasing Agreements, ensuring that materials and goods adhere to Philips' stringent environmental and social standards. Unilever's Environmental Care Framework adheres to ISO 14001 standards, ensuring compliance with globally recognized environmental management requirements. Furthermore, the Forest Stewardship Council (FSC) certification guarantees that products originate from sustainably managed forests, providing environmental, social, and economic benefits. Additionally, the Rainforest Alliance certification recognizes farms, forests, and businesses that meet stringent environmental and social standards. IKEA collaborates with the Forest Stewardship Council (FSC) to ensure wood sourcing from FSC-certified or recycled resources, promoting responsible forest management. It also participates in the Aluminum Stewardship Initiative (ASI), focusing on recycled content and chain of custody certification for aluminum supply chains. Through the Responsible Minerals Initiative (RMI), IKEA ensures ethical mineral sourcing while addressing social and environmental impacts across its supply chain.

Collaboration with regulators and international organizations is fundamental to achieving compliance with evolving sustainability standards and driving systemic change. Companies like Philips, Unilever, and IKEA exemplify leadership in fostering such partnerships, using their influence to shape global and regional sustainability agendas.

Philips collaborates with the Platform for Accelerating the Circular Economy (PACE), to promote global leadership and accelerate the transition to a circular economy. The company also works with the World Business Council for Sustainable Development (WBCSD) to develop standardized circular economy criteria, participating in meetings and task groups, exchanges best practices, and supports sustainable business initiatives. Moreover Philips collaborates with international and national governments to influence laws and policies for sustainability, in fact it plays a key role in the Dutch Circular Economy Agenda (NPCE), promoting policies to reduce virgin resource usage and support its 2025 circularity goals.

Unilever has implemented comprehensive sustainable waste management initiatives in collaboration with the Brihanmumbai Municipal Corporation (BMC), State Bank of India, Aurangabad Municipal Corporation (AMC), United Nations Development Programme (UNDP). The company also collaborates with government and industry organizations to develop packaging alternatives and implement a National Framework for Extended Producer Responsibility (EPR) to align plastic waste management legislation across national and state levels and improve recycling infrastructure. To advance reuse-refill models, Unilever partners with the Ellen MacArthur Foundation and the Consumer Goods Forum to enhance scalability and economic feasibility, while contributing to the World Economic Forum's Consumers Beyond Waste initiative to standardize measurement and reporting methods for reuse. Unilever advocates for a global plastics treaty, emphasizing the need for comprehensive measures to address the plastic waste crisis. It also co-finances a second Life Cycle Assessment (LCA) on sustainable palm oil and the World Foods Life Cycle Database Initiative. As a sponsor of the United Nations Environment Programme (UNEP) Life Cycle Initiative, Unilever promotes using LCA in policymaking and decision-making processes.

IKEA contributed to the EU Commission Expert Group/Multistakeholder Platform on global forest protection and restoration, providing insights into laws such as the EU Timber Regulation and Forest Law Enforcement, Governance, and Trade (FLEGT)

regulation. The company also participated in the European Business and Biodiversity Forum, organized by WWF-France, to discuss adapting to evolving biodiversity regulations, focusing on complex reporting obligations and accelerating biodiversity efforts. IKEA supported policymakers by providing evidence-based insights for the EU Circular Economy Action Plan, endorsing the Ecodesign for Sustainable Products Regulation, and offering design recommendations to enhance circularity. It advocated for including textiles, furniture, and mattresses in future EU rules, emphasized incentives for reuse and repair, proposed redefining "waste," and called for scalable secondary raw material markets. Collaborating with the European Furniture Industries Confederation (EFIC) and EuroCommerce, IKEA participated in industry dialogues on ecodesign guidelines and the digital product passport, solidifying its role in advancing the circular economy.

These collaborations enable companies to navigate complex regulatory environments, foster innovation in sustainable practices, and establish effective frameworks for advancing the circular economy transition. Through active engagement with stakeholders and commitment to shared goals, these organizations set the stage for systemic and scalable sustainability solutions.

Table 2: Similarities in Circular Economy practices across Philips, Unilever, and IKEA

Company	Circular Economy (CE) Goals	Regulatory Compliance	Certifications	Collaborations
Philips	Increase circular revenues to 25% by 2025; Zero waste to landfill by 2025; Achieve 95% circular materials management by 2025	EU Circular Economy Action Plan, WEEE, RoHS, EcoDesign Directive; US CERCLA, RCRA, Clean Air Act, Clean Water Act; China's Circular Economy Promotion Law; India's EPR framework	ISO 14001; Supplier Sustainability Declaration; Restricted Substance List	PACE; WBCSD; Dutch Circular Economy Agenda; Collaborates with governments to influence sustainability policies
Unilever	100% plastic packaging reusable/recyclable/biodegradable by 2025; Halve food waste; 15% recycled plastic in products by 2025; Net-zero emissions by 2039; 30% reduction in virgin plastic by 2026 and 40% by 2028	Aligns with EU and national regulations; Supports National Framework for EPR in India; Advocates for global plastics treaty; Sponsors UNEP Life Cycle Initiative	ISO 14001; Forest Stewardship Council (FSC); Rainforest Alliance	Collaborates with BMC, State Bank of India, AMC, UNDP; Partners with Ellen MacArthur Foundation, Consumer Goods Forum, World Economic Forum; Advocates for packaging alternatives and EPR alignment
IKEA	Fully circular business model by 2030; Phase out single-use plastics by 2028; Plastic-free home furnishing packaging by 2025; 80% recycled aluminum content by 2030; One-third of wood products from recycled wood by 2030	EU Timber Regulation; Forest Law Enforcement, Governance, and Trade (FLEGT); EU Circular Economy Action Plan; Advocates for ecodesign guidelines and digital product passport	Forest Stewardship Council (FSC); Aluminum Stewardship Initiative (ASI); Responsible Minerals Initiative (RMI)	EU Commission Expert Group/Multistakeholder Platform on Forest Protection; European Business and Biodiversity Forum; Supported policymakers for EU Circular Economy Action Plan; Collaborates with EFIC and EuroCommerce

4.1.2. Differences

The approach to Circular Economy (CE) integration varies significantly across industries due to the differing nature of the products, supply chains, and market expectations faced by Philips, Unilever, and IKEA. These differences can be seen in each company's focus areas and the challenges they encounter in embedding CE principles into their operations.

Philips, operating in the medical equipment and consumer electronics sectors, places a strong emphasis on product take-back programs, refurbishment, and resale. Given the long lifecycle and high value of its products, Philips is focused on extending the lifespan of its medical devices through its "Closing the Loop" policy. This initiative involves retrieving, refurbishing, and reselling medical systems like MRI machines, which are highly resource-intensive to manufacture. The company's focus is on maximizing resource efficiency by refurbishing and reusing high-cost equipment, which also helps

in reducing the use of virgin materials. Philips' reliance on sophisticated, durable products creates a CE strategy that emphasizes technical solutions, such as improving product recyclability and reducing e-waste.

On the other hand, Unilever, as a fast-moving consumer goods (FMCG) company, faces different challenges. Its CE strategy is heavily focused on packaging and the reduction of plastic waste, a critical issue in the consumer goods industry, where single-use plastics dominate. Unilever's goal of making 100% of its plastic packaging reusable, recyclable, or compostable by 2025 reflects its need to address waste at the product consumption stage. Unlike Philips, which deals with fewer but more expensive products, Unilever must manage billions of units of packaging globally. The scale and frequency of consumption in FMCG means Unilever's CE efforts are more about volume reduction and material substitution, such as using biodegradable materials in place of virgin plastics. This difference in product scale and consumption rate means Unilever's approach is more centered around design for sustainability in packaging and supply chain adjustments rather than product lifecycle management.

IKEA, in the furniture and home goods sector, employs a different set of strategies based on circular product design principles. Its focus is on extending product lifespans through initiatives like its Buyback & Resell program, where customers return used furniture in exchange for store credit, allowing IKEA to refurbish and resell these items. IKEA's focus on designing products that are modular, durable, and easy to disassemble for recycling reflects its commitment to product circularity. Unlike Philips, which deals with high-value medical systems, or Unilever, which focuses on disposable packaging, IKEA's products exist in a middle ground longer-lasting but mass-produced items that require design innovations for both durability and recyclability. This leads IKEA to emphasize sustainable materials sourcing, particularly in wood and textiles, and using recycled materials in production.

Thus, while Philips, Unilever, and IKEA all demonstrate a strong commitment to Circular Economy (CE) principles, their strategies are inherently shaped by the unique characteristics of their respective industries, products, and market dynamics. These differences underscore how the consistent core principles of CE must be adapted to address sector-specific challenges and opportunities.

Table 3: Differences in Circular Economy integration across Philips, Unilever, and IKEA

Company	Key CE Strategy	Distinctive Approach
Philips	Product take-back programs, refurbishment, and resale; "Closing the Loop" policy	Focuses on long-lifecycle, high-value products (e.g., MRI machines); emphasizes resource efficiency, recyclability, and e-waste reduction
Unilever	Reduction of plastic waste; 100% reusable/recyclable/compostable packaging by 2025; material substitution with biodegradable plastics	Focused on high-volume, disposable packaging; addresses waste at the consumption stage through sustainable packaging design
IKEA	Circular product design; Buyback & Resell program; sustainable materials sourcing	Targets modular, durable, and recyclable products; balances mass production with sustainability goals, emphasizing wood and textiles sourcing

4.1.3. Identifying common challenges

One of the significant challenges in implementing CE practices is the complexity of global supply chains and the involvement of multiple suppliers. For example, Philips is working on reducing emissions and waste through collaboration with suppliers, but managing a global supply chain can create issues such as ensuring consistent implementation of circular practices across different regions and regulatory environments. Unilever also faces resistance to change from suppliers, particularly when it comes to transitioning to sustainable practices across their supply chains, especially in sourcing high-risk commodities like palm oil. IKEA, on the other hand, struggles with ensuring responsible sourcing, particularly in forest material supply chains, due to the difficulty of mapping sub-contractors and understanding their compliance with CE principles. These complexities make it difficult to integrate CE strategies consistently across all regions.

Furthermore, all three companies face challenges in educating consumers and driving demand for sustainable products. Philips actively communicates the benefits of circularity to consumers, launching campaigns like "Better than New" to promote refurbished products. However, there remains a general lack of awareness and

consumer resistance to choosing sustainable alternatives. Unilever addresses this issue through campaigns like "Start A Little Good," encouraging sustainable consumer behavior, but it also struggles with changing consumer habits on a large scale. IKEA similarly works on promoting sustainable consumption through initiatives like its Buyback & Resell program, but consumer adoption of these models remains a challenge. For all companies, the barriers to educating consumers and encouraging the widespread adoption of sustainable behaviors represent a significant challenge in fully realizing CE strategies.

Table 4: Common Challenges in implementing Circular Economy practices across Philips, Unilever, and IKEA

Company	Supply Chain Challenges	Consumer Education Challenges
Philips	Managing global supply chains and ensuring consistent implementation of CE practices across regions	Campaigns like "Better than New" to promote refurbished products, but faces consumer resistance and lack of awareness
Unilever	Resistance to change from suppliers, particularly in sourcing high-risk commodities like palm oil	Campaigns like "Start A Little Good" to encourage sustainable behavior, but struggles to change consumer habits
IKEA	Ensuring responsible sourcing in forest material supply chains and mapping sub-contractors	Initiatives like Buyback & Resell program to promote sustainable consumption, but consumer adoption remains low

4.1.4. Identifying best practices

This section highlights the successful strategies adopted by Philips, IKEA, and Unilever to promote circular economy (CE) principles, illustrating how they have overcome the challenges outlined in the previous section.

Despite the challenges of managing global supply chains, Philips has achieved significant success with its creative business models, such as the "Closing the Loop" policy, which uses a product-as-a-service approach to salvage, repair, and resell used medical equipment, thereby prolonging its lifecycle and reducing resource consumption. The company collaborates with key partners, such as the Ellen MacArthur Foundation and Friends of the Earth, to align its business objectives with global sustainability benchmarks, emphasizing circular design and systemic transformation. Philips

integrates extended producer responsibility (EPR) through take-back measures that ensure medical equipment is built for longevity and managed ethically throughout its lifecycle. Furthermore, Philips' "Better than New" campaign educates consumers on the environmental benefits of refurbished items, encouraging sustainable purchasing habits. Employee engagement is embedded in Philips' culture through initiatives like the Circular Economy Masterclass, while the company actively reclaims thousands of medical systems annually to reduce reliance on new materials. Collaborations with academic institutions, such as the University of Exeter Business School, and adherence to ISO 14001 certification further reinforce Philips' leadership in CE innovation.

Although responsible sourcing in forest material supply chains poses significant difficulties, IKEA has achieved substantial progress through its "Buyback & Resell" program, which enables consumers to return pre-owned furniture for store credit, reintegrating these items back into circulation. In response to the challenges of responsible sourcing, particularly in forest material supply chains, IKEA has partnered with WWF, focusing on sustainable procurement and habitat restoration in regions like Brazil and Colombia. The company also aims for zero waste to landfill by 2030, transforming manufacturing waste into new products to maintain material circulation. IKEA emphasizes circular design, using 77% recycled materials in its aluminum products, demonstrating its commitment to incorporating post-consumer waste into manufacturing. Employee participation in CE initiatives is promoted through Sustainability Working Groups that foster collaboration and accountability. In addition, IKEA has invested substantially in renewable energy research and development, supported by the IKEA Foundation, to underscore its dedication to CE and clean energy practices. Certifications such as FSC and Aluminum Stewardship also help IKEA maintain supply chain integrity.

While overcoming supplier resistance and encouraging consumer behavioral shifts has proven complex, Unilever has advanced its CE practices by implementing Material Recovery Facilities through partnerships with entities like UNDP and Xynteo, thereby improving its recycling infrastructure and advancing CE scalability. The company has also implemented refill stations to reduce reliance on single-use plastics, while collaborating with governments to establish Extended Producer Responsibility (EPR) frameworks that ensure plastic waste is either recycled or reused effectively. To address the challenge of consumer adoption, Unilever launched the "Start A Little Good"

campaign, aiming to influence consumer habits towards sustainable choices. Internally, Unilever involves its employees in CE efforts through continuous sustainability training, ensuring alignment with CE goals across the organization. The company has also achieved 100% renewable power across its operations, emphasizing its dedication to reducing environmental impact, while ensuring sustainability throughout its supply chain.

Table 5: Successful Circular Economy strategies across Philips, Unilever, and IKEA

Company	Key Initiatives	Notable Outcomes
Philips	"Closing the Loop" policy; "Better than New" campaign; Circular Economy Masterclass; Partnerships with Ellen MacArthur Foundation and Friends of the Earth; ISO 14001 certification	Prolonged product lifecycle; Reduced reliance on new materials; Alignment with sustainability benchmarks
IKEA	"Buyback & Resell" program; Partnerships with WWF; Zero waste to landfill by 2030; 77% recycled materials in aluminum products; Sustainability Working Groups; Investments in renewable energy R&D; FSC and Aluminum Stewardship certifications	Increased product circulation; Sustainable procurement practices; Use of post-consumer waste; Improved supply chain integrity
Unilever	Material Recovery Facilities partnerships with UNDP and Xynteo; Refill stations; Extended Producer Responsibility (EPR) frameworks; "Start A Little Good" campaign; 100% renewable power; Continuous sustainability training for employees	Enhanced recycling infrastructure; Reduced single-use plastics; Influenced consumer habits; Achieved 100% renewable power

4.2. Contextualizing research findings within the theorical literature

The comparative analysis in this research reveals critical insights into how multinational corporations like Philips, Unilever, and IKEA integrate Circular Economy (CE) practices. By situating these findings within the frameworks of the Natural-Resource-Based View

(NRBV) and Institutional Theory, this section contextualizes the research outcomes, offering a deeper understanding of the relationship between internationalization and CE practices.

4.2.1. Alignment with the natural-resource-based view (NRBV)

The findings from the case studies of Philips, Unilever, and IKEA reveal a strong alignment with the core principles of the Natural-Resource-Based View (NRBV), which emphasizes the strategic role of internal capabilities and resources in achieving a sustainable competitive advantage (Hart, 1995). The NRBV identifies three interconnected strategic capabilities essential for sustainable development: pollution prevention, product stewardship, and sustainable development itself. The implementation of these capabilities across different companies demonstrates how they navigate environmental challenges through internal resource optimization and innovation.

First, pollution prevention emerges as a foundational capability for companies striving to reduce waste and emissions at the source. This approach is evident in the operational strategies of the studied companies, particularly in their efforts to achieve zero-waste-to-landfill goals. Philips demonstrates a strong commitment to reducing waste through continuous process improvements and advanced manufacturing practices. It leverages its Environmental Management System (EMS), certified to ISO 14001 standards, to systematically monitor and manage environmental performance. Lifecycle Assessments (LCAs) and Environmental Profit and Loss (EP&L) accounts enable Philips to identify critical environmental hotspots and innovate accordingly. Unilever, on the other hand, has achieved notable advancements in reducing its environmental footprint by utilizing targeted resources and strategic processes. Since 2008, Unilever has reduced energy consumption by 45% and factory waste by 58% per tonne of production. IKEA integrates CE principles through a resource-efficient approach that emphasizes renewable energy and product lifecycle extension.

Second, the concept of product stewardship emphasizes extending environmental responsibility across the entire product lifecycle, from design to disposal. This principle is deeply embedded in the circular economy initiatives of the companies analyzed. Circular design practices, such as take-back programs and refurbishment initiatives, illustrate how firms integrate product stewardship to enhance resource efficiency. Philips

takes a proactive role in extending the lifecycle of its products through preventative maintenance and software updates to reduce environmental impact during the use phase. Unilever's Supplier Climate Programme works with supply chain partners to develop emissions reduction strategies. Furthermore, Unilever integrates consumer-focused initiatives like cold-water washing campaigns and refill stations to reduce single-use plastics. IKEA's design strategies focus on creating repairable and reusable products, incorporating circularity into product design. Additionally, IKEA raises awareness of sustainable consumption through campaigns and actively influences consumer demand for energy-efficient and sustainable products.

Finally, sustainable development represents a long-term strategic commitment to addressing societal and environmental challenges. Companies achieve this by investing in green innovations and collaborating with stakeholders to implement inclusive business models. The NRBV highlights the importance of engaging with fringe stakeholders, such as NGOs and local communities, to co-create solutions that meet both business and societal needs. Philips' partnerships with organizations like UNICEF and Ashoka amplify its impact on societal challenges, such as improving healthcare access and disaster relief. IKEA’s efforts in sustainable development extend beyond its operations to create employment opportunities for marginalized groups through partnerships with social enterprises. In 2023, IKEA has provided jobs for over 11,000 individuals, exemplifying its commitment to inclusive and equitable practices. Unilever prioritizes community-focused projects, such as Project Prabhat and Suvidha Centers, which improve livelihoods, health, and sanitation in underserved areas.

4.2.2. Influence of external pressures and institutional theory

Institutional Theory provides a valuable framework for understanding how external pressures coercive, normative, and mimetic shape organizational behavior, especially in the context of adopting Circular Economy (CE) practices (DiMaggio & Powell, 1983). Across the three multinational corporations (Philips, Unilever, and IKEA), external pressures have played a crucial role in driving their sustainability strategies, as companies face varying degrees of regulatory requirements, market expectations, and societal norms.

Coercive isomorphism stems from regulatory pressures that compel organizations to comply with environmental standards. For Philips, compliance with European

environmental regulations such as the EU EcoDesign Directive and the Waste from Electrical and Electronic Equipment (WEEE) Directive is a key driver. These regulations require Philips to minimize the use of virgin materials, achieve zero waste to landfill, and improve energy efficiency. To meet these requirements, Philips employs its Environmental Management System (EMS), certified to ISO 14001 standards, which systematically tracks and manages environmental impacts. Additionally, Philips uses Life-Cycle Assessments (LCAs) to evaluate the environmental footprint of its products, allowing the company to identify hotspots for improvement and prioritize innovations like the use of recycled materials. Unilever also adapts its processes to meet international environmental regulations by reducing packaging waste and implementing zero-waste initiatives. These efforts are supported by supply chain collaborations and investments in closed-loop recycling systems, as well as the adoption of sustainability certifications to guide procurement and production processes. IKEA, operating in over 50 countries, addresses coercive pressures by designing products for recyclability, using renewable resources, and integrating circular design principles into its manufacturing processes. The company's extensive supplier network is monitored to ensure adherence to environmental standards, facilitated by partnerships that enable the sourcing of certified sustainable materials like FSC-certified wood.

Normative isomorphism arises from adherence to industry standards and professional norms. Philips demonstrates this through its commitment to the United Nations Global Compact, which establishes principles for sustainability and ethical business practices. To align with these norms, Philips integrates CE practices such as circular materials management and eco-friendly product design into its operations. These efforts are coordinated through cross-functional teams and governance structures, ensuring sustainability objectives are embedded across all levels of the organization. Unilever aligns with normative pressures by obtaining certifications for sustainable sourcing, such as Rainforest Alliance and Fair Trade, which not only reflect adherence to industry standards but also guide procurement strategies. The company's partnerships with NGOs and participation in professional networks ensure that its operations align with global sustainability expectations. IKEA's commitment to using only renewable or recycled materials by 2030 exemplifies its response to normative pressures. The adoption of sustainability standards, such as FSC certification for wood, is operationalized through supplier agreements and rigorous compliance checks. IKEA

also invests in employee training programs to instill sustainability principles throughout its workforce, ensuring alignment with industry best practices.

Mimetic isomorphism occurs when organizations emulate successful peers to navigate uncertainties. Philips exemplifies this by adopting circular economy strategies that mirror best practices in the industry. For instance, Philips introduced its Circular Materials Management metric to track and optimize the use of recycled materials. Initiatives like product refurbishment and re-use programs reflect a mimetic approach while enhancing the company's competitiveness in CE practices. Unilever similarly adopts CE strategies modeled on those of other leading multinational corporations, investing in closed-loop recycling systems and focusing on reducing packaging waste. These efforts are inspired by successful implementations in the fast-moving consumer goods sector, reinforcing Unilever's position as a sustainability pioneer. IKEA's adoption of innovative CE practices, such as "product-as-a-service" models and closed-loop recycling systems, showcases its mimetic approach. By emulating strategies that have proven effective elsewhere, IKEA navigates the uncertainties of CE adoption while building its reputation as a sustainable organization. These initiatives are supported by investments in research and development, as well as collaborations with external stakeholders to refine and implement best practices.

5. Conclusion

This thesis set out to explore the role of internationalization in advancing circular economy (CE) practices within multinational corporations. By examining three industry-leading companies—Philips, Unilever, and IKEA—this research has highlighted the internal and external drivers of CE adoption through the combined lenses of the Natural-Resource-Based View (NRBV) and Institutional Theory. The findings reveal that internationalization serves as both a catalyst and a challenge for CE practices, enabling firms to innovate internally while responding to diverse external pressures across different markets. The integration of NRBV and Institutional Theory offers a holistic understanding of how companies leverage internal capabilities while aligning with external regulatory and market demands to adopt sustainable practices.

The main contributions of this study lie in its unique integration of the NRBV and Institutional Theory frameworks to analyze CE adoption within the context of

internationalization. This dual perspective offers valuable insights into how firms can enhance their capabilities to meet both environmental and market demands. It also emphasizes how coercive, mimetic, and normative pressures influence organizational behavior, driving companies to standardize and adopt CE practices across diverse geographic markets.

From a practical standpoint, the research identifies best practices in CE implementation, such as Philips' focus on lifecycle assessments, Unilever's dedication to energy efficiency, and IKEA's circular product design initiatives. Companies aspiring to enhance their sustainable practices through internationalization can draw lessons from these approaches, particularly on balancing local responsiveness with global standardization to achieve CE goals effectively.

Internationalization provides a valuable opportunity for companies to innovate and collaborate on a global scale, thereby enhancing their sustainable practices. By leveraging international networks and resources, companies can foster the development of more efficient technologies and enhance cross-border partnerships that promote sustainability. This interconnected approach not only encourages the sharing of best practices but also leads to more significant advancements in CE adoption across industries.

Additionally, the influence of internationalization extends to encouraging companies to establish global standards for sustainability, which can ultimately create a level playing field across markets. This harmonization of CE practices helps build resilience in global supply chains, ensures resource efficiency, and reduces environmental impact. Companies that successfully adapt their CE practices to align with both global and local demands are better positioned to secure a competitive advantage, enhance brand reputation, and contribute to the global sustainability agenda.

Moreover, the findings reveal the importance of dynamic capabilities in facilitating CE adoption. Companies like Philips demonstrate how investing in lifecycle assessments, environmental management systems, and cross-functional leadership teams enhances their ability to adapt to changing environmental conditions. Building these dynamic capabilities enables firms to innovate and maintain resilience in the face of evolving sustainability challenges.

Externally, the study underscores the role of stakeholder engagement in driving CE adoption. Companies must collaborate closely with governments, NGOs, suppliers, and consumers to promote sustainable practices and overcome resistance to change. Educational campaigns, incentive programs, and transparent communication are essential tools for fostering consumer support and encouraging sustainable behaviors. Firms that engage stakeholders effectively can strengthen relationships, enhance brand reputation, and secure long-term competitive advantages.

Future research should investigate how emerging technologies such as digitalization, artificial intelligence, and blockchain can enhance circular economy (CE) adoption. Digital tools could improve resource management through better data analytics, while AI might optimize product lifecycles. Blockchain could increase supply chain transparency, ensuring that materials are reused according to CE principles. Additionally, examining the influence of cultural differences on CE practices across regions could shed light on adapting strategies to diverse global contexts, facilitating more effective implementation of sustainability initiatives.

In conclusion, internationalization acts as a powerful force in promoting circular economy practices, pushing companies to innovate and adapt to various regulatory and market pressures. By aligning internal strengths with external requirements, firms can turn sustainability challenges into opportunities, gaining a competitive edge while contributing to global sustainability efforts. The insights provided here offer a valuable framework for understanding and advancing CE practices in an increasingly interconnected world.

6. Limitations

While this study provides valuable insights into the role of internationalization in fostering CE practices, it is not without limitations.

Firstly, the research relies heavily on publicly available information, which may not capture the full extent of each company's internal processes, challenges, and strategic decision-making. Some relevant data might be proprietary or undisclosed, which could limit the depth of the analysis. Furthermore, corporations may selectively publish information that portrays them as more successful in adopting CE practices or

emphasize “circular” success stories over other types of information. This potential bias could skew the analysis by focusing on idealized versions of CE adoption rather than a balanced view of both successes and challenges.

Secondly, the study focuses on three multinational corporations, each operating in different industries. While this provides a broad perspective, it also limits the generalizability of the findings to other companies or industries. The specific drivers, barriers, and best practices identified in this study may not be fully applicable to smaller firms or those operating in less regulated markets.

Thirdly, the analysis is primarily qualitative, relying on interpretation of secondary data. While this approach provides a comprehensive understanding of the subject matter, it lacks the empirical rigor of quantitative analysis, which could have provided more definitive conclusions.

Lastly, the dynamic nature of global markets and regulations means that the findings of this study are subject to change as new regulations emerge, consumer preferences evolve, and technological advancements occur. Future research could address these limitations by incorporating more diverse case studies, quantitative data, and longitudinal analysis to provide a more robust understanding of the relationship between internationalization and CE practices.

In conclusion, while the study offers significant contributions to the understanding of how multinational corporations can effectively integrate CE practices, it also highlights the need for continued research to address the evolving challenges and opportunities in this field.

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Facultad de Ciencias Económicas, Empresariales y Turismo. Plaza de la Victoria, 2. 28802. Alcalá de Henares. Madrid - Telf. (34)918855187. E-Mail: catedra.rsc@uah.es

CÁTEDRA DE RESPONSABILIDAD SOCIAL CORPORATIVA

DIRECTORA

Dra. Dña. Elena Mañas Alcón

Profesora Titular de Universidad, Universidad de Alcalá