The Transition from Single-use to Reusable Packaging Systems in the FMCG Industry

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Abstract:

This thesis explores the transition from single-use to reusable packaging systems in Europe's fast-moving consumer goods (FMCG) industry. The thesis aims to identify the main challenges preventing this transition and the key solutions companies adopt to overcome them. The thesis research is accomplished using a qualitative approach, where the interviews were the basis of the primary data gathered from various professionals working in FMCG and packaging suppliers. The research is underpinned by packaging logistics, circular economy, and reuse model-oriented concepts. The results expose that the most significant hindrances include the initial funds, the differences in regulation among markets, and the reluctance of people to change their behaviour. Companies are addressing these obstacles by piloting reusable programs in supportive markets, offering consumer incentives, and collaborating with suppliers to innovate cost-effective, durable packaging solutions. The study is limited by its small sample of sectoral professionals and the predominant regional focus, which may not fully represent global trends. Furthermore, the study provides valuable insights into how companies can adapt to sustainability demands and offers recommendations for industry practices and future research.

Keywords:

Reusable packaging, single-use packaging, FMCG industry, sustainability, circular economy, reusable models.

Contents

1 Introduction

The FMCG (Fast-Moving Consumer Goods) sector leverages packaging as a design medium with an extensive global presence, engaging billions of consumers worldwide daily (Srinivasan & Lu, 2014). Packaging is indispensable for food products, safeguarding their quality and safety by preventing contamination and spoilage, which is ubiquitous, with almost every food product relying on various types of packaging. It also facilitates branding and advertising by standardizing products, enabling mass distribution and merchandising. With innovations like resealable openings and dispensing mechanisms, packaging enhances product usability and consumer convenience. (Robertson, 2009)

The expansion of packaging material usage in recent years can be attributed to developments in retail, such as the demand for greater convenience. Furthermore, the move toward single-use packaging in supply chains is influenced by the globalization of supply chains, the growing significance of large retailers, and the logistical advantages of single-use packaging. (Coelho et al., 2020)

Consequently, the extensive reliance on single-use packaging, particularly plastics, has led to increasing concerns about waste generation, carbon emissions, and resource depletion. According to Eurostat, the EU generated 83.4 million tonnes of packaging waste in 2021, equating to an average of 186.5 kg per capita. Paper and cardboard were the most widely used among these materials, with plastic and glass following. As a result, organizations and businesses are shifting their focus toward reusable packaging systems that align with FMCG. (Eurostat, 2021)

With the growing demand for new sustainable packaging, transitioning from recycling to reusing products is advantageous because it preserves a more excellent value. Significantly, packaging reuse holds considerable potential for maintaining the functionality of materials and products, reducing material usage and environmental impacts (Coelho et al., 2020). The best and most promising solution is reusable packaging systems, recognized for their environmental and economic advantages. According to the United Nations Environment Programme, transforming the throwaway economy into a

reuse-oriented society requires boosting the market for reusable products and creating conditions that make reuse systems more economically viable than single-use plastics (United Nations Environment Programme, 2025). The Pew Charitable Trusts and Systemiq (2020) highlight that shifting 30% of plastic packaging to reusable models could create a business opportunity, benefiting consumers and significantly contributing to reducing plastic waste and pollution primarily by replacing the most problematic and non-essential products.

1.1 Problem statement

The transition from single-use to reusable packaging systems in the FMCG sector is new but presents multifaceted challenges. While various packaging designs serve distinct purposes throughout the product lifecycle, packaging materials rapidly deteriorate and ultimately become waste when the product is consumed. Several studies have investigated sustainable solutions to this issue, but most have not achieved widespread acceptance. According to (Zink & Geyer, 2017), circular rebound effects could be where unforeseen repercussions compromise sustainability. This might be difficult for customers because the packaging will eventually show signs of deterioration and superficial damage from repeated washings, shipping, and refilling (White et al., 2016). Moreover, while businesses' sustainable goals encourage the adoption of reusable packaging, companies need to comply with the substantial financial and operational investment. The adoption of reusable packaging disrupts the conventional cost allocation framework in infrastructure. Finally, the environmental benefits of reusable packaging systems depend on their optimization, as it may affect the quality of the packaging.

1.2 Aim of the study

The study aims to explore the feasibility of transitioning from single-use to reusable packaging systems in the FMCG industry, focusing on the challenges associated with this shift. The study seeks to identify key barriers, such as logistical complexities, financial burdens, and consumer behaviour that hinder the adoption of reusable packaging systems. The study is designed to answer the following questions:

- What are the key challenges in transitioning from single-use to reusable packaging systems in the FMCG industry?
- What are key solutions in transitioning from single-use to reusable packaging systems in the FMCG industry?

1.3 Demarcation

This study focuses on transitioning from single-use to reusable packaging systems within the European FMCG industry, emphasizing the challenges associated with this shift. The research analyses reusable packaging systems in food, beverage, and household products, as these categories represent a significant share of FMCG packaging waste and offer potential for impactful change. Since the FMCG products exclusively focus on primary packaging, the study focuses on all factors related to primary packaging.

The study does not cover sectors beyond the FMCG industry, such as electronics or pharmaceuticals, because their packaging requirements and challenges differ significantly. Additionally, while this research considers environmental sustainability a critical factor, it does not conduct in-depth life-cycle analyses or carbon footprint calculations for specific packaging materials, since such assessments require specialized methodologies and resources.

The study was chosen to ensure a manageable scope and provide actionable insights specific to the FMCG industry, a major contributor to packaging waste and a driver of consumer behaviour.

1.4 Definitions

The study focuses on the following major concepts:

Fast-Moving Consumer Goods (FMCG) refers to “products that sell quickly at relatively low cost. FMCGs have a short shelf life because of high consumer demand (e.g., soft drinks and confections) or because they are perishable (e.g., meat, dairy products, and baked goods)” (Investopedia | Kenton, 2024).

Single-use packaging refers to “plastic products (SUPs) are used once, or for a short period of time, before being thrown away”(European Commission, 2019).

Reusable Packaging refers to “packaging that has been conceived, designed and placed on the market to accomplish within its life cycle multiple trips or rotations by being refilled or reused for the same purpose for which it was conceived.” (European Commission, 2018)

Deposit Refund Schemes (DRS) refers to “systems that charge users an extra fee when they buy a product, which is refunded if the product packaging is returned for recycling or reuse.” (European Commission, 2019).

2 Theory

The theory chapter examines the theoretical framework, focusing on the associated challenges that explain research questions. It explores key packaging concepts, functions, and dimensions alongside their roles in logistics. The chapter then critically evaluates packaging materials, emphasizing eco-friendly alternatives that align with sustainability objectives. The chapter discusses reusable packaging models and examines EU packaging regulations, evaluating regulatory factors influencing packaging practices. Finally, it highlights effective waste management and circular economy principles as a role in sustainable development in the FMCG industry.

2.1 Packaging

Packaging is an essential element of contemporary businesses' routine operations. It delivers numerous functions that facilitate the product's efficacy and cater to the diverse professionals involved, including the packaging manufacturers, logistical operators, users, and end consumers. Packaging- which some have called banal, is frequently derided when its contents are removed, is the result of human ingenuity working for humanity. (Debeaufort et al., 2021)

The definition of "packaging" in the Packaging Waste Directive is described as: "all products made of any materials of any nature to be used for the containment, protection,

handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer" (EU Directive, 1994/62).

Packaging can be defined as the enclosure of products in various containers, such as pouches, boxes, trays, bottles, or cans, to fulfil functions while also encompassing their physical appearance, including design, colour, shape, labelling, and materials used (Robertson, 2009; Yaro, 2015)

Fast-Moving Consumer Goods (FMCG) packaging refers to the design, materials, and functionality used for daily consumer products sold quickly and at relatively low costs. As competition within the industry increases, companies increasingly invest in innovative packaging designs to enhance product differentiation and strengthen brand recognition. (Srinivasan & Lu, 2014; Vartan & Rosenfeld, 1987)

Therefore, these goods are designed to meet customer demand and must be bought repeatedly. Typically, the empty package is usually discarded when these needs are met. As a result, the content of the packaging satisfies the need.

2.1.1 Packaging dimensions and functions

Packaging is a coordinated system designed to prepare goods for transport, distribution, storage, retail, and end use, ensuring their safe delivery to consumers. It functions as a material-handling tool by containing precise quantities of products within individual containers or grouping multiple units for efficient distribution. Additionally, packaging serves as a processing aid, as seen in sterilizing food within metal cans, while protecting products from damage and waste. (Coles & Kirwan, 2011; Debeaufort et al., 2021)

According to Pålsson (2018), the packaging is classified into primary, secondary, and tertiary. The primary packaging is frequently the consumer or sales package, which is the package that is closest to the product.

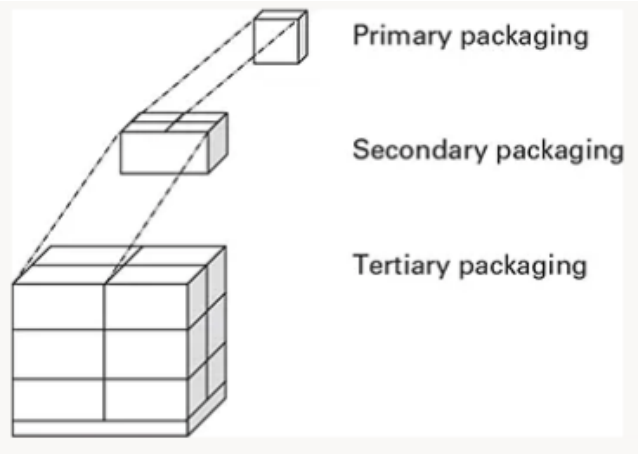

Figure 1. The interrelated levels of a packaging system (Pålsson, 2018)

Packaging serves four primary functions: containment, protection, convenience, and communication, which must be included in the package development process (Debeaufort et al., 2021). The main functions of packaging are to:

Containment means that packaging must securely contain the product during transportation and handling to fulfil its primary function. If this requirement is not met, such as in cases of package damage, it can lead to product spoilage and, in certain cases, significant environmental harm. (Debeaufort et al., 2021)

Protection refers to the fact that a product's protection is the most important function of packaging. It prevents damage from external factors that may cause it, including mechanical impact, adverse environmental conditions, contamination, and infestation, during transportation. Packaging is designed to maintain product integrity throughout its journey from the manufacturer to the end consumer, ensuring it reaches its destination in optimal condition. (Debeaufort et al., 2021)

Convenience refers to packaging that should enhance user convenience by facilitating the handling, use, and disposal of the packaging and its contents. This includes designing easy packaging to open, reseal, transport, and discard efficiently throughout the supply chain. (Pålsson, 2018)

Communication refers to the fact that a packaging serves a crucial communication function from both logistical and consumer perspectives. The supply chain provides essential tracking and identification data through labelling technologies such as

barcodes and radio-frequency identification (RFID). These systems enable real-time monitoring of a product's location, time, temperature, and other relevant information across warehouses, transportation networks, ports, and retail stores. Packaging also plays a key role in consumer decision-making by conveying important product details, distinguishing items from competitors, and acting as a marketing tool influencing purchasing choices. (Debeaufort et al., 2021; Pålsson, 2018)

2.1.2 Packaging materials

Maende (2018) states that packaging material refers to any protective covering designed to safeguard a product. Different materials possess unique properties suited for specific products, contributing to extended shelf life and improved convenience across usage scenarios. The primary materials used in packaging are glass, paper and paperboard, steel, aluminium, wood, and plastics. Glass is a durable and non-reactive material commonly used for food and beverage packaging due to its excellent barrier properties and recyclability. Paper and paperboard are lightweight, biodegradable, and widely used for cartons, labels, and wrapping, offering sustainability benefits but limited moisture resistance. Steel and aluminium provide substantial protective barriers, making them ideal for canned food, aerosol containers, and beverage packaging, with aluminium being particularly valued for its lightweight and corrosion-resistant properties. Wood is primarily used for pallets, crates, and bulk packaging, offering strength and reusability, though it is susceptible to moisture and requires treatment for long-term use. Plastics are versatile, lightweight, and cost-effective, making them the most used packaging material, but concerns about environmental impact have led to increasing efforts in recycling and biodegradable alternatives. (Auras & Selke, 2022)

2.2 Reusable Packaging

Packaging practices within the FMCG industry are often excessive and contribute significantly to environmental harm. The widespread reliance on single-use plastic packaging, including bottles, containers, and wrappers, has resulted in substantial waste generation and environmental impact. (Jain & Hudnurkar, 2022) Previous research has predominantly focused on packaging reduction and recycling, with less attention given to reuse, despite its potential to reduce virgin materials' consumption significantly (Ertz

et al., 2017). According to Pålsson (2018), reusable packaging refers to a component specially designed to be reused without weakening its protective function. In the FMCG sector, the reuse process involves utilizing products or components for the same intended purpose for which they were initially designed, with or without the assistance of supplementary products available in the supermarket (BSI, 2004). Reusable packaging, typically made from durable materials, can be recovered, sanitized, and reintegrated into supply chains or reused by consumers. By minimizing waste, preserving natural resources, and reducing carbon emissions linked to single-use packaging production and disposal, reusable packaging contributes inclusively to environmental sustainability. (Kirwan, 2007)

2.2.1 Reusable models from EMF (2019)

Ellen MacArthur Foundation (2019) outlines four key reuse models that aim to reduce waste and enhance circularity in product lifecycles. (Figure 2)

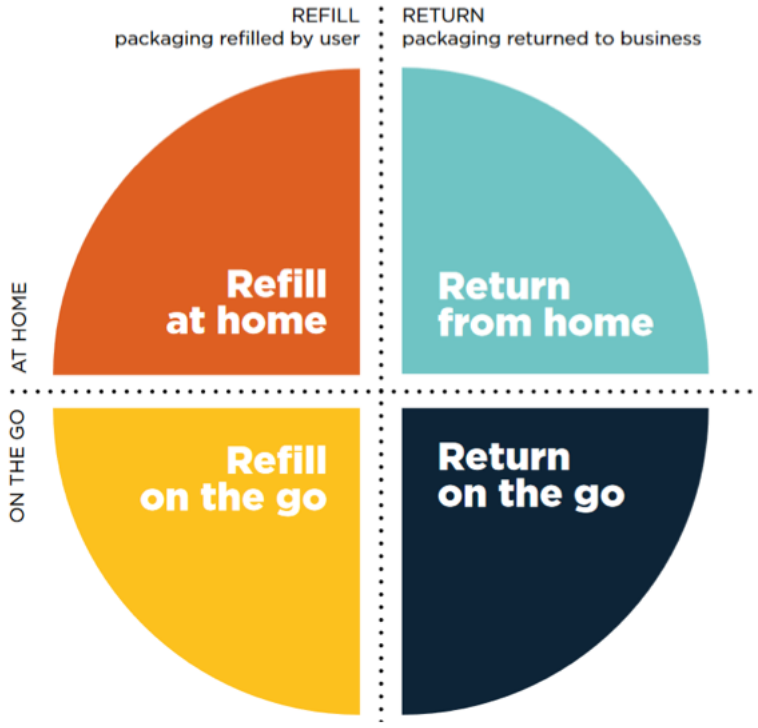

Figure 2. Business-to-consumer reuse models (EMF,2019)

According to EMF (2019), the reuse models can be categorized based on two fundamental consumer behaviours: refilling and returning. In refill-based models, such

as refill at home and refill on the go, consumers retain ownership of the packaging and are responsible for refilling it as needed. In contrast, return-based models, including return from home and return on the go, involve businesses maintaining ownership of the packaging, with consumers returning it after use for cleaning and redistribution. This distinction highlights the varying degrees of consumer participation and business involvement in the reuse process:

Refill at home: Consumers retain ownership of the packaging and replenish products using concentrates, pouches, or tablets. This approach is commonly used in household cleaning, personal care, and food products, where bulk refills help reduce packaging waste.

Refill on the go: Consumer bring their reusable containers to refill stations at retail locations or vending machines. This model is often used in beverages, detergents, and personal care products, beneficial in convenience while reducing single-use packaging.

Return from home: Businesses maintain ownership of the packaging, and consumers return it through collection systems such as the postal pickups or scheduled home collection services. This model is frequently used in e-commerce, food delivery.

Return on the go: Consumers return used packaging at designated drop-off locations, for example, retail stores, kiosks, or deposit-return stations. This model is commonly in beverage container deposit schemes, where incentives encourage consumers to participate in the reuse process.

2.2.2 Reusable models from Coelho et al (2020)

Coelho et al. (2020) classify the reusable packaging model based on their functionality and application, distinguishing four key types (Figure 3): refillable by bulk dispenser, refillable parent packaging, returnable packaging, transit packaging.

Table 1
A classification of reusable packaging

Type of packaging	Packaging description	Product examples
Refillable by Bulk Dispenser	Customers use their packaging or brand's refillable packaging in-store or at a mobile truck, making the use of further packaging unnecessary.	Cereals, grains, candy, wine, juice, mineral water, beer, olive oil, vinegar, detergent, soap, hair care products, perfume, body and face lotion
Refillable Parent Packaging	**Bottle, container, pouch, pod, tablet, powder**The refill packaging is made with less material than parent packaging. Parent packaging can be refilled by: - pouring product inside parent packaging; - placing container inside of parent packaging; - diluting concentrated product in water inside parent packaging.	Makeup, dental floss, tooth and mouth wash tabs, deodorant, perfume, cosmetics, cleaning products, hair care products, flavoured water
Returnable Packaging	**Container, bottle, cup, plate, bowl,...** Customers return empty packaging which will be cleaned and refilled for future use by the retailer/producer (can be combined with a deposit system to provide a financial incentive).	Beer, soft drinks, mineral water, perishables, detergent, soap, cosmetics, hair care products. Reusable cups, containers, plates. (for events, cafes, restaurants)
Transit Packaging	**Boxes, containers, soft packages** Customers receive the product in reusable packaging which is returned by door delivery/pick up, or through the post office. **Crates, pallets, wrappers** Customer reuses packaging multiple times before being returned to the producer or disposed of.	Reusable packaging for transport or shipping of perishables or non-perishables. B2C: for moving home or office location or e-commerce delivery of apparel, furniture or perishables. B2B transport from producer-warehouse-store.

Figure 3. Classifications of reusable packaging (Coelho et al.,2020a)

These models are further classified into two groups that sustain reuse systems: Packaging systems rely solely on consumers to maintain the reuse cycle. This group includes Refillable by Bulk Dispenser, where individuals refill their containers at dispensing stations, and Refillable Parent Packaging, which includes durable containers designed for multiple uses before replenishing refill packs.

In contrast, the Business Owners category requires direct involvement from companies to sustain the reuse cycle, necessitating reverse logistics, cleaning processes, and infrastructure to manage returned packaging. This category includes returnable packaging, which typically operates within a deposit-refund system, and transit packaging, widely used in business-to-business (B2B) logistics to transport goods efficiently. Coelho et al. (2020) also note that some reusable packaging systems can belong to both categories simultaneously. For instance, an individual consumer may refill a branded container for bulk dispensing multiple times before eventually being returned to the company for cleaning and redistribution.

2.2.3 Reusable models from Muranko et al (2021)

Consumer behaviour is gaining significant attention as a key driver in the circular economy. Recent research on the reuse of FMCGs has explored various psychological factors influencing consumer perceptions. Specifically, the ownership plays an important role in determining the structure of reuse models, as it defines the level of responsibility assigned to either the consumer or the business. (Muranko et al., 2021).

Muranko et al. (2021) distinguish between reuse behaviours within reusable packaging models: exclusive and sequential reuse. These behaviours describe how consumers interact with reusable products and determine each product's ownership and access patterns. The differences between the models are illustrated in Figure 4.

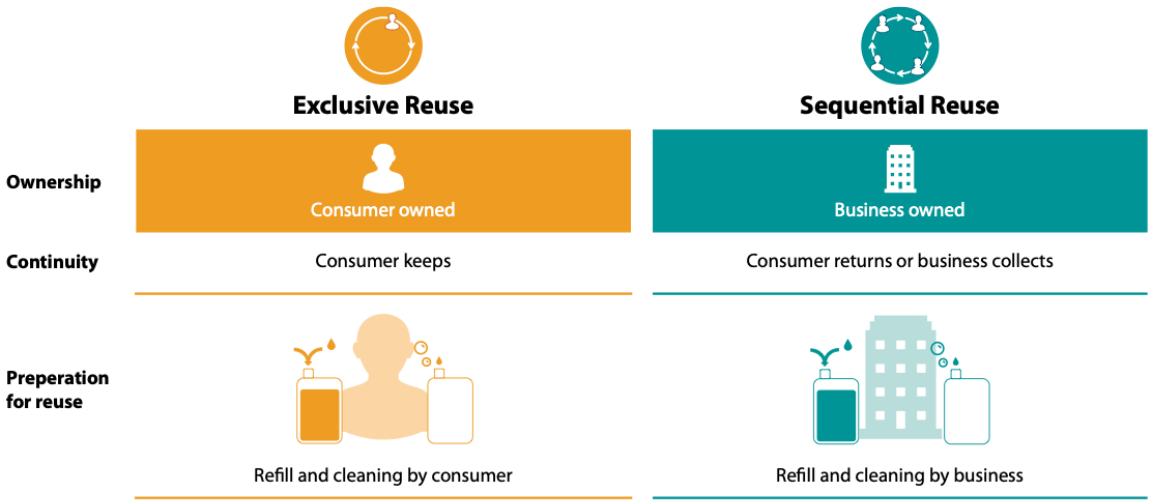

Figure 4. Difference between exclusive reuse and sequential reuse conducted by Hesseling (2022) based on Muranko et al. (2021).

Exclusive reuse is a model in that a single consumer or household retains sole ownership and unrestricted access to a reusable product. In this system, the individual or household uses the product continuously without sharing it with the others. This model emphasises that the consumer has full responsibility for maintaining, cleaning and refilling the product as needed, and not passing it to others. (Muranko et al., 2021)

Sequential reuse is a model in which multiple consumers use a reusable product in succession. In this system, the product is returned after each use to be made available for subsequent users. Consumers do not have exclusive, long-term access to the product, as it circulates through different individuals or households. The responsibility for cleaning and maintaining the product is typically shared or managed by the business or a third party that ensures the product remains in suitable condition for reuse. (Muranko et al., 2021)

2.3 EU regulations of packaging waste

The Packaging and Packaging Waste Directive (94/62/EC) was adopted in 1994 and has undergone several revisions and the most recent being in 2018. The Directive aims to

reduce packaging waste across the EU and improve the recovery and recycling of packaging materials. The Directive sets targets for packaging waste reduction and promotes the reuse and recycling of packaging materials, for example, plastics, glass, paper, and metal (European Commission, 2018). The Directive contributes to the use of materials that can be easily used or recycled.

2.3.1 The Packaging and Packaging Waste Regulation

In order to incorporate elements in the circular economy, the Directive aims to reduce the environmental impacts through measures that incentivize reusable packaging solutions. A key element of the revised Packaging and Packaging Waste Regulation is to push forward reducing waste management by introducing new materials and designs of reusable and refillable packaging that align with the goals of transitioning FMCG packaging systems to a more sustainable model. In response, FMCG companies are increasingly adopting practices to reduce material use and optimize new packaging design for reuse. This regulation is also complemented by the SUP, by supports the development of packaging, which reduces single-use plastic and promotes sustainability of the shift toward a circular economy in the packaging sector. (European Commission, 2018)

Additionally, the European Commission proposed a comprehensive revision of the Packaging and Packaging Waste Directive (94/62/EC) that transitions into a regulation to ensure uniform implementation across EU countries. PPWR aims to address the growing issue of packaging waste, which currently amounts to 180 kg per capita annually in the EU. Without intervention, packaging waste is projected to increase by 19% by 2030, with plastic packaging waste rising by 46%. The regulation seeks to curb this trend by promoting reuse and refill systems, eliminating unnecessary packaging, and ensuring that all packaging is fully recyclable by 2030. It sets a headline target of reducing packaging waste by 15% per capita by 2040, leading to a 37% reduction in waste compared to a scenario without legislative changes. The regulation introduces standardized reusable packaging formats, banning specific single-use packaging (e.g., miniature hotel toiletries, plastic-wrapped fruits and vegetables), and mandatory deposit return systems for plastic bottles and aluminium cans.

Furthermore, it mandates the inclusion of recycled content in plastic packaging, thereby reducing dependence on virgin materials. The regulation aligns with the EU's Circular Economy Action Plan. It is expected to generate over 600,000 jobs in the reuse sector by 2030 while also reducing greenhouse gas emissions from packaging by 35%, saving €6.4 billion in environmental costs, and decreasing water usage by 1.1 million cubic meters. The regulation seeks to simplify waste sorting and enhance recycling efficiency by providing clear labelling on packaging materials and recycling bins. While the transition will require business investment, the economic and environmental benefits, including potential consumer savings of €100 per year, make it a crucial step toward sustainable packaging in Europe. (European Commission, 2022)

2.3.2 The Single-use Plastic Directive

The Single-Use Plastics Directive (SUPD), notably EU 2019/904, adopted by the European Union in 2019, is a cornerstone regulation to reduce plastic pollution, particularly in marine environments. The directive targets the most commonly used single-use plastic items, such as plastic cutlery, straws, and food containers. The SUPD encourages members to adopt national measures that reduce the consumption of single-use products to minimize their environmental impact. (European Commission, 2019)

One of the central regulations of the SUPD is the reduction of single-use plastics in the market through restrictions on specific products. By 2021, EU countries were required to restrict the sale of certain single-use plastic products, including plastic cutlery, plates. Furthermore, the Directive encourages using alternatives to single-use plastics, such as reusable packaging or sustainable materials. The Directive also emphasises that by 2025, all plastic packaging placed on the EU market must be recycled or reusable to 25%. This target pushes the FMCG industry to adopt reusable packaging solutions as part of their sustainable strategies that reduce their reliance in single-use plastic packaging and foster innovations in reusable materials. (European Commission, 2019)

Another significant aspect of the SUPD is its emphasis on Extended Producer Responsibility (EPR). Under EPR schemes, producers are held accountable for the entire lifecycle of their products, including recycling, collection, and disposal. This regulation encourages companies to take proactive steps in designing packaging that can

be reused or recycled, therefore reducing the environmental impact of their products. (European Commission, 2019)

2.4 The Circular Economy as Sustainable Development

The concept of circular economy (CE) is increasingly described as a crucial strategy for promoting sustainability in various industries, including Fast-Moving Consumer Goods (FMCG) (Nwabekee et al., 2024). Unlike the traditional linear economy that follows a “take, make, dispose” model, the circular economy is centred around reducing waste, reusing materials, and recycling products and resources. This model aims to foster a system where the lifecycle of products is extended. A circular economy seeks to create a restorative and regenerative system that benefits the environment and society by promoting the continual use of resources.

The circular economy approach is founded on several core principles, such as designing for longevity, maintaining product value, and closing the loop. These principles focus on designing products and packaging that are durable, easy to repair, and ultimately recyclable or reusable. This shift in design thinking encourages companies to create high-quality products that can be returned to the system at the end of their life cycle, either for reuse or remanufacturing (Ellen MacArthur Foundation, 2017). Circular economy principles also encourage businesses to adopt closed-loop supply chains, where the materials used to make products are continually reused, reducing the need for new raw materials and the environmental impact associated with their extraction. This implies that although the entire literature has some ideas related to consumer products, many more business strategies may be established. For instance, creating items for emotional connection in the FMCG environment might be important (for textiles, for instance) while creating advanced, user-centred services (for food, packaging, and drinks, for instance, such as refilling packaging or recycling on the move) for "fast" loops may be feasible. (Kuzmina et al., 2019)

According to Murray et al. (2017), implementing circular economy (CE) models in the FMCG industry presents many challenges. A significant barrier to circular economy adoption is the inadequacy of efficient recycling technologies and infrastructure. Changes in production and consumption patterns, such as establishing supportive

infrastructures (reverse logistics and recycling facilities, for instance), must be made to ensure that products can be effectively collected, reused, or recycled. To address this problem, the European Commission's Packaging and Packaging Waste Regulation (PPWR), which entered into force in 2025, has introduced stricter regulations to encourage infrastructure improvements.

3 Method

This chapter covers the research process in detail, including a careful examination of the research topic and the information gathered to provide reliable responses during the study. The section that follows, the qualitative method, is described, along with a concise explanation of why the technique was chosen given the study's goals. The reasoning for selecting specific individuals is also thoroughly described, focusing on how these decisions support the study's objectives. Because the study aims to investigate the research issues from various viewpoints, the interview guide and questionnaire are essential for organizing the data-gathering procedure. These tools are created with the theoretical framework in mind, guaranteeing that they effectively respond to the research questions and offer significant insights. In the final sections, attention is given to the validity, reliability, and ethical considerations surrounding the chosen method.

3.1 Choice of method

The choice of method is fundamental to the research process, and selecting the right approach ensures that the data collected will directly contribute to answering the research questions meaningfully. Qualitative research is often described as gathering information to be analysed verbally. Qualitative and quantitative research differ in not only the type of data needed to answer the research questions, the nature of the research challenge, and the research questions, all of which influence the choice of research methodology, but also in the kinds of questions that interest the researcher, what is already know about the subject, and how meaning and interpretation play a part in what the researcher trying to record. (Creswell, 2014; Newhart & Patten, 2023)

This study examines the FMCG industry's transition from single-use to reusable packaging using a qualitative research approach, particularly semi-structured interviews. Brinkmann & Kvale (2015) assert that semi-structured interviews are beneficial for examining topics that need a thorough comprehension of individual experiences and subjective opinions.

A prevalent qualitative method is semi-structured interviews, which provide the flexibility to delve deeper into participants' answers while following a predetermined set of questions. This format allows for the collection of detailed and rich data, capturing participants' individual experiences, attitudes, and insights regarding the challenges associated with the transition to reusable packaging (Ruslin et al, 2022). In contrast to quantitative methods, which prioritize numerical data and statistical analysis, qualitative research emphasizes the interpretation of textual or verbal data, making it better suited to capture the complexities of the study (Ahmad et al, 2019).

As Patton (2002) argues, qualitative methods are ideal for exploring how individuals interpret their experiences and the variables affecting their choices. The semi-structured interview approach produces a rich dataset that may address the subtle features of the study's research objectives by allowing the researcher to strike a balance between uniformity across interviews and the flexibility required to follow up on intriguing or unexpected topics.

3.2 Respondents

The selection of responders is essential to guaranteeing the quality and applicability of the data that has been collected. The literature in sampling in qualitative research emphasizes the importance of choosing participants who can offer comprehensive information on the research topic. A small, carefully sampled collection is frequently common in qualitative research to reach saturation when no new themes arise from further data collection (Guest et al., 2006). The sample size for this study has been purposefully maintained modestly so that the interviews may concentrate on each interviewee’s experiences and perspectives. The interviewees are chosen based on the organisational context that ensures variety in terms of company size, location within Europe, and product types.

In qualitative research, several effective sampling methods are used when choosing respondents. Hennink et al. (2020) emphasize that snowball sampling helps find participants with unique traits, uncommon experiences, or those in hard-to-reach groups. This method relies on referrals, where current participants suggest others who meet the study criteria, creating a recruitment chain. The process continues as each new participant recommends additional individuals, much like a snowball growing. A key advantage of this approach is its ability to leverage social networks to identify participants who may otherwise be difficult to reach. Additionally, because referrals come from trusted sources, potential participants may feel more comfortable joining the study, increasing overall engagement.

According to Bryman (2016), participants in qualitative research are usually chosen based on their familiarity with the research topic. In qualitative research, rooted in the interpretive paradigm, prioritizes deep, contextual insights over broad generalizations. Instead of relying on probability sampling, it employs purposive sampling, where participants are intentionally chosen based on their relevance to the study. This approach remains flexible, allowing adjustments to ensure diverse perspectives while following structured principles. As a result, focusing on individuals with valuable insights, purpose sampling strengthens the research by providing a rich and varied understanding of the topic. (Hennink et al., 2020; Patton, 2002) For this study, purposive sampling was used to select respondents who have direct involvement in the decision-making processes regarding packaging in the FMCG sector; the participants are chosen from key roles within the industry, including supply chain managers, product development managers, who have firsthand experience with packaging strategies and sustainability initiatives. By focusing on individuals with relevant expertise and insight, the study aims to capture the perspectives of those actively engaged in the challenges and opportunities associated with the shift toward reusable packaging.

In order to ensure transparency, Table 1 below provides an overview of the respondents involved in the study, while maintaining anonymity for each participant.

Table 1. Overview of Respondents

Respondent No.	Position	Years of experience	Industry Sector
Company A	Sustainability Manager	10+	Food & Beverage
Company B	Operations Director	8	FMCG
Company C	Supply Chain Specialist	6	FMCG
Supplier D	Packaging Supplier	5	Manufacturing

3.3 Interview guide

An interview guide is a structured framework that outlines the key themes and questions to be covered during an interview, maintaining consistency while allowing flexibility for more in-depth discussion (Gill et al., 2008). For example, semi-structured interviews offer a mix of open-ended conversation and controlled inquiry, allowing researchers to modify questions in response to participant replies while staying focused on the study's goals (Adams, 2015). A semi-structured interview guide was created for this study to investigate the opinions of industry professionals on the FMCG sector's shift from single-use to reusable packaging. The guide was developed using the research questions and theoretical framework as a reference to guarantee compatibility with the study's goals. It had a range of follow-up and open-ended questions intended to gather detailed data while letting participants freely express their opinions.

The interview guide was divided into three main sections. The main goals of the first section's introductory questions were to establish connections and obtain background information on the participant's role, experience, and interest in packaging sustainability. Current packaging practices, supply chain issues, customer behaviour, regulatory impacts, and the viability of reusable packaging solutions from an economic standpoint were all covered in detail in the second section (see Appendix 1 & 2). Open-ended questions were designed to stimulate conversation, and follow-up questions assisted in elaborating on answers and delving further into new ideas. Reflections on prospective industry changes and future trends about the use of reusable packaging were

included in the interview's concluding section. There are several differences between the interview guides of the professional groups (see Appendix 1& 2), but the primary purpose is to focus on sufficient information for the study. The semi-structured format ensured that all interviews covered the same core themes while allowing for flexibility in response exploration. This approach was particularly beneficial in understanding the diverse perspectives of professionals within the FMCG industry, providing rich qualitative data to support the study's findings.

3.4 Research approach

After completing the interviews and transcribing the responses, the data were methodically examined to identify recurrent themes, important ideas, and trends related to the FMCG industry's shift from single-use to reusable packaging.

The author interviewed professionals who work for FMCG companies, as well as packaging suppliers and sustainability experts who develop and implement packaging solutions. Purposive sampling procedures were utilized to choose participants because they met specific criteria regarding expertise in packaging systems and knowledge of regulations and consumer trends. Additional key informant selection utilized a snowball sampling approach because researchers wanted to obtain valuable insights from several individuals.

The interview methodology included virtual video platform meetings according to their availability and geographical location. Each discussion lasted between 30 and 60 minutes and used informal conversation styles to help participants fully express their insights. The research instrument, based on existing questions and theory, allowed the investigation of new topics without compromising the study's standardized approach. Interview participants discussed industrial obstacles alongside governmental regulation effects, rational barriers, and customer interactions with reusable package systems through open-ended inquiries.

The interviewees provided their authorization for recording interviews, which made the data collection process more accurate. The discussions were supplemented by written notes, which recorded significant points and unspoken signals that enhanced the

understanding of participant responses. The interviewed recordings were converted into complete transcriptions for in-depth systematic analysis.

3.5 Analysis of the data

In qualitative research, data analysis methodically arranges and analyzes findings from gathered data to ensure significant insights. Thematic analysis is an effective method for identifying themes and patterns in qualitative data, enabling researchers to explore recurrent concepts and narratives (Braun & Clarke, 2006; Creswell & Poth, 2018). A systematic analysis of the data was conducted using thematic analysis, categorizing responses into different groups based on the most frequently occurring issues. The investigation revealed the perceptions of experts in sustainability, regulatory impacts, and operational feasibility, focusing on the behavioural models adopted by the respondents as key indicators of what is possible or challenging. The study has not only discussed the various aspects of the use of reusable packaging but also identified the barriers to its implementation and the potential driving forces for change. This approach ensures that the analysis retains its integrity while considering the diversity of human viewpoints and experiences. Since semi-structured interviews were employed in this study, thematic analysis was chosen as the primary method of data analysis because it provided flexibility in obtaining detailed insights while maintaining an organized analytical process.

The results were methodically arranged in a structured way to provide consistency and clarity, allowing for direct comparisons across various professional viewpoints. To evaluate the success of ongoing activities, related industry responses and strategic approaches were analysed for each highlighted problem, which provided a comprehensive understanding of the progress made toward reusable packaging systems and the existing constraints that must be addressed to accelerate widespread adoption.

The data analysis began by transcribing all recorded interviews to accurately reflect participants' responses. Before coding, each transcript underwent a thorough examination to familiarize the researcher with its contents. The coding process involved identifying key phrases, concepts, and themes related to the study's research questions concerning the transition from single-use to reusable packaging in the FMCG industry.

Nowell et al. (2017) emphasizes the importance of an inductive approach in qualitative research, where themes emerge from data rather than being predetermined. In this study, an inductive technique was employed to enhance dependability, ensuring that patterns and themes developed organically based on the collected data. This approach ensured that the analysis remained uninfluenced by preexisting theoretical assumptions and stayed rooted in the participants' perspectives.

Since the initial codes were generated, they were categorized into more general groups that represented the major themes of the study. A comparative study was carried out to find comparisons and differences in the viewpoints of professional groups, allowing for a more sophisticated comprehension of the elements influencing the sector's shift to sustainability. The themes were refined through iterative review, ensuring they accurately represented the data while maintaining coherence across different responses.

3.6 Validity and reliability

In qualitative research, validity and reliability are essential concepts that ensure the findings are trustworthy and accurately represent the studied phenomena. While reliability refers to the consistency and dependability of the results across time and among various researchers, validity refers to the degree to which a study assesses what it requires to be evaluated; unlike quantitative research, where validity is often assessed through statistical tests, qualitative research focuses on concepts such as credibility, transferability, dependability, and confirmability to ensure the robustness and trustworthiness of the findings. (Brink, 1993; Lincoln & Guba, 1985)

This study used various techniques to demonstrate validity and improve the precision and reliability of the results. First, semi-structured interviews were selected as the data collection technique because they allow for thoroughly examining participants' viewpoints while preserving a formal framework to guarantee uniformity throughout interviews. To ensure content validity, the interview questions were meticulously crafted to correspond with the research aims of the study and were guided by pertinent theoretical frameworks. Additionally, Brink (1993) emphasizes that to increase credibility and lower the possibility of researcher bias, member verification was also

carried out by sharing the summarised findings with chosen participants to confirm the accuracy of the interpretations.

According to Brink (1993), reliability in qualitative research is often assessed through dependability, which refers to the stability of the findings over time. Thematic analysis, directed by accepted qualitative research principles, was offered as a systematic method for locating patterns and themes. This ensured that the conclusions were reliably derived from the data. Additionally, an audit trail was maintained, recording all methodological decisions, coding processes, and analytical reflections, allowing for transparency and potential replication of the study by other researchers.

These methodological considerations provided a solid foundation for understanding the transition from single-use to reusable packaging in the FMCG industry, offering valuable insights for academic research and industry practice.

3.7 Research ethics

Research ethics refers to the principles and standards that guide the conduct of research to ensure that it is carried out with integrity, respect for participants, and adherence to legal and professional norms. These standards guarantee that study participants' rights and well-being are upheld at every investigation stage. Research ethics are crucial in maintaining the study's credibility and ensuring the outcomes are valid and responsible. In qualitative research, ethics encompass several dimensions, including informed consent, confidentiality, the right to withdraw, and the researcher's integrity in reporting findings (Soltis, 1989).

In this study, the author strictly adhered to the ethical guidelines. When participants received comprehensive information on the goals and purpose of the study, the kind of data being gathered, and how their involvement would advance the research. Each participant received an informed consent form to ensure they knew of their rights and felt comfortable moving forward. This form clarified that participation was optional, that withdrawal was possible, and that their answers would be kept private. The participants received guarantees that their names would be kept anonymous and that

neither the published findings nor the final report would contain any personally identifying information.

Throughout the research, the author has taken care to ensure that the data collected was used responsibly. The findings were reported accurately and without distortion, reflecting the actual perspectives of the participants. Additionally, ethical considerations extended to the reporting phase, where the author ensured that the study's results contributed to a meaningful understanding of the topic and were used to benefit the relevant professional groups, including the participants, for instance, audio recordings were used exclusively by the researcher and were not shared with third parties or maintaining objectivity was deemed essential to ensure that no bias or favouritism influenced the findings.

4 Results

This chapter presents the study's main results to explore the associated challenges and solutions in the FMCG industry. The findings are based on semi-structured interviews with professionals of different roles and sectors, offering insights into the practical realities.

The analysis focuses on two main topics based on the research questions. Interviewers highlighted the main challenges in the transition from single-use to reusable packaging. Moreover, several solutions were carried out to raise awareness related to sustainability goals.

4.1 Challenges in transitioning from single-use to reusable packaging systems

The shift toward sustainable packaging presents several significant challenges for companies, particularly within the FMCG industry, as companies strive to align with environmental goals while maintaining operational efficiency. Consequently, based on the primary research that includes structured interviews with industry representatives reveals three core obstacles specifically related to cost, regulations, and consumer behaviour.

The table below shows key findings based on each interview conducted with each representative. Each organization reported unique challenges in cost, regulatory issues, and consumer behaviour.

Table 2. Key Findings from Interviews on Challenges in Reusable Packaging Transition

Company/Interviewee	Cost challenges	Regulatory challenges	Consumer behaviour challenges
FMCG Company A	High initial investment in reusable containers and return logistics; limited budget for circular packaging R&D.	Lack of navigating differing regulations in domestic and EU markets.	Consumers hesitant to return packaging; limited understanding of reuse systems for example household products.
FMCG Company B	Increased operational costs due to need for cleaning and storage infrastructure.	Uncertainty in long-term policy direction	Negative perceptions around hygiene and convenience put off reuse participation for example beverage.
FMCG Company C	Difficulty in scaling reusable models across multiple product lines results in cost of reverse logistics.	Fragmented standards across markets make reuse system implementation complex.	Customers demand convenience leads to low motivation to participate in deposit-return systems for beverage.
Packaging Supplier D	Rising material and production costs for durable, reusable packaging	Struggles with compliance as clients face differing sustainability criteria and legislation.	Customers tend to choose more familiar packaging formats that are perceived as easier to use and dispose of.

Cost Challenges

The financial obstacles to adopting reusable packaging solutions rank as the primary impediment to adoption by FMCG companies and packaging suppliers. For company A, developing durable multi-use containers requires substantially higher capital at the beginning of development than standard single-use packaging. FMCG companies need to select materials that are high in durability to survive the demands of extended cleaning procedures alongside frequent logistics trips without breaking their product quality. The cost of materials grows heavier when manufacturers modify packing designs to fit reuse features while achieving attractive branding and protecting products.

In contrast, company B must bear substantial investment and material expenses to construct an infrastructure that operates reverse logistics networks. Forming collection spots, cleaning sites, and distribution programs demands a significant initial financial outlay. Multiple markets require companies to duplicate infrastructure investments, so their overhead costs increase proportionally. The operational expenses of system maintenance become heavy on budgets because cleaning and sanitization processes require high hygiene standards, particularly in food and beverage applications. Company C emphasized long-term cost uncertainty, noting that the scaling reusable models anticipated from reduced material use and waste management had not yet materialized in product lines.

Research and development expenses have become a financial burden for both company A and packaging supplier D in developing reusable packaging concepts through testing and refinement. Companies conduct durability tests, lifecycle assessments, and consumer field trials that demand specialized knowledge and lengthened procedures to evaluate reusable packaging systems. The unpredictable nature of return on investment makes decision-makers uneasy about investment choices, especially since consumer adoption levels are hard to predict. Small manufacturers and suppliers encounter significant hurdles when attempting to absorb reusable packaging costs, due to which they maintain inferior competitive positions than substantial corporations that possess superior financial abilities

Regulatory Challenges

Reusable packaging compliance requires industry participants to navigate complex regulatory requirements that create numerous obstacles. Company A expressed frustration in understanding countless international, local, and regional regulations that change often and conflict with each other. The European Union's Packaging and Packaging Waste Regulation (PPWR) and the Single-Use Plastics Directive (SUPD) set minimum standards; however, member states implement their national requirements. Consequently, unrestricted legislation forces multinational corporations to establish numerous packaging structures to satisfy the requirements of various authorities results in burden for company B and C. Supplier D state that different market policies force manufacturers and distributors to navigate complex challenges when achieving

packaging solution standardization. The decision-makers noted that varying regulatory approaches act as obstacles that prevent companies from expanding reusable packaging programs among international markets.

Moreover, the lack of standardized definitions for key terms such as "reusable," "recyclable," and "compostable" leads to additional confusion among stakeholders. Companies have difficulty producing packages that satisfy all interpretation requirements, leading them to choose safe but possibly suboptimal sustainable approaches. Packaging development processes extending multiple years encounter significant challenges due to the regulatory uncertainties that occur more frequently than the predicted timespans.

Consumer Behaviour Challenges

Consumer acceptance is the most fundamental barrier to adopting reusable packaging systems. Environmental awareness is growing, challenging the deep-rooted habits that make people resist packaging system modifications. Company A noted resistance to returning reusable containers due to inconvenience. Many consumers preserve their preference for convenience because they became accustomed to single-use disposable packaging during the disposability culture. The procedures needed in reuse systems for cleaning containers, ensuring their proper return, and paying deposits create unwanted challenges for customer when returning products for example household products.

The lack of cleanliness assurance is a foremost psychological preventative for company B that primarily affects food and beverage items packaged for consumption. People feel disturbed about reusable containers since research shows proper cleaning methodologies keep the products safe, but consumers are unconvinced. The lack of visible cleanliness assurances in many reuse systems exacerbates these concerns.

The educational shortage creates additional struggles with behavioural issues for company. Most users fail to grasp the complete operation of reuse programs since they do not understand proper return procedures and collection point locations said by company C. Many consumers do not know how reuse systems operate, including how to return containers or where collection points are correctly located for example each bottles had to collect in the right deposit-return systems. Even environmentally

conscious consumers often struggle to navigate the practicalities of reuse systems, leading to frustration and disengagement.

Supplier D identified a broader problem through people show mistrust toward the economic benefits of reusable packaging systems. People who receive affordable rates for disposable packaging show reluctance toward deposit fees and reusable option costs, though these payments prove worthwhile in the long run. Consumers' high sensitivity to prices presents significant barriers for businesses that launch reuse systems in affordable ways, particularly in price-sensitive FMCG markets.

4.2 Solutions in transitioning from single-use to reusable packaging systems

Since the interviews were conducted anonymously, the primary sources were presented in this study. Based on its role in the supply chain and operational focus, this table illustrates how each company has implemented practical solutions to overcome the challenges faced during the shift to reusable packaging.

Table 2. Key Findings from Interviews on Solutions in Reusable Packaging Transition

Company/Interviewee	Solutions implemented
FMCG Company A	- Implemented a phased pilot test of reusable systems, starting with key markets where regulations align. - Increased consumer incentives (discounts, loyalty points) for packaging returns.
FMCG Company B	- Developed a closed-loop system for reusable packaging to reduce logistics complexity. - Launched a consumer awareness campaign to align purchasing behaviour with sustainability goals.
FMCG Company C	- Offered consumer incentives for participation and implemented clear messaging around the environmental benefits of reuse.
Packaging Supplier D	- Invested in R&D to create more cost-efficient and customizable reusable packaging solutions. - Collaborated with FMCG companies to educate consumers through targeted campaigns and trials for new products.

In terms of cost, Company A implemented a phased pilot test to reduce financial risk, while Company C emphasized industry collaboration to share infrastructure costs. The packaging supplier D, invested in R&D to develop more affordable reusable options.

Company B created internal task forces to track policy developments and maintain compliance to manage regulatory uncertainty, and Company A prioritized rollouts in regions with supportive legislation. Company D also worked with clients and regulators to guide more practical policy development.

Consumer behaviour presented a significant challenge. Company C addressed this with awareness campaigns and convenient return systems, while Company B focused on more explicit instructions to reduce confusion. The packaging supplier supported brand partners by co-developing messaging to encourage consumer participation.

5 Discussion

This chapter presents the discussion of the study's key findings, focusing on how companies within the FMCG industry and a packaging supplier are addressing the transition to reusable packaging systems related to the theoretical frameworks discussed in the Theory chapter. The discussion interprets the results with the research questions and the method background, which highlights the main challenges and evaluating the strategies adopted by different companies to overcome the issues.

5.1 Discussion of results

The findings from this study revealed critical insights into the challenges and potential solutions associated with the transition from single-use to reusable packaging systems in the FMCG industry. These insights align closely with the theoretical models and literature reviewed in Chapter Two and Chapter Three, particularly those related to packaging functions, circular economy strategies, and reuse models.

Among the interviews, one of the most consistent themes was the significant financial costs of reusable packaging systems. This economic issue confirms the earlier statement in the literature that initial financial investments in infrastructure, design innovation, and cleaning logistics can be substantial (Coelho et al., 2020; Muranko et al., 2021). Companies A and B pointed to the strain of upfront capital expenditure required to support reusable packaging operations. These costs are not only related to physical materials but also encompass logistical arrangements such as reverse logistics and the provision of cleaning and recycling of returned items. This observation reflects the challenges identified by the Ellen MacArthur Foundation (2019) and Coelho et al. (2020), particularly in reuse models requiring reusable business models of reverse logistics networks.

The study also showed that regulatory complexity plays a substantial role in slowing the adoption of reusable systems. Organizations operating across multiple EU markets encounter regulatory fragmentation, which limits the feasibility of scalable implementation, which supports previous research that highlighted the inconsistency application of directives such as the Packaging and Packaging Waste Regulation

(PPWR) and Single-Use Plastics Directive (SUPD), despite their intent to standardize sustainability practices (European Commission, 2019; 2022). These inconsistencies force businesses to customize their packaging compliance strategies for each region, creating inefficiencies and disincentivizing broader adoption.

Consumer behaviour emerged as the most unpredictable challenge. Although environmental awareness is growing, the findings highlight how entrenched habits and expectations for convenience often undermine reusable packaging efforts. The refusal to return containers, confusion about hygiene, and general unfamiliarity with reuse logistics emphasise earlier studies on consumer resistance and psychological barriers to circular models (Ertz et al., 2017; White et al., 2016). For instance, interviewees observed that despite incentives such as loyalty points or discounts, many consumers still preferred single-use packaging, viewing it as simpler and more reliable.

However, the study also identified proactive solutions that align with theoretical reuse frameworks. Companies that adopted phased implementation strategies, starting in markets with clearer regulatory support or, managed to mitigate risk while gradually building capacity. These proactive strategies reflect the recommendation of Muranko et al. (2021), who advocated for adaptive reuse models that vary in ownership and control based on stakeholder readiness. Furthermore, campaigns focused on consumer education and co-branded messaging were considered essential to shifting public perception and behaviour, reflecting the circular economy emphasis on stakeholder collaboration (Kuzmina et al., 2019).

A notable outcome of the study is the growing emphasis on industry collaboration among FMCG firms and between companies and suppliers. Packaging Supplier D's collaboration in developing customizable solutions shows how aligning supply chain actors can lower costs and ease regulatory compliance. The outcome supports the assertion that the circular economy relies on collective, cross-sectoral innovation (Nwabekee et al., 2024).

The results reinforce the theoretical notion that transitioning to reusable packaging is not a singular technical upgrade but a broad practical transformation. It requires coordinated action across product design, consumer engagement, regulatory challenges,

and operational logistics. While each company's challenges are context-specific, the broader pattern reveals the need for regulatory direction, financial support mechanisms, and a shift in consumer culture toward long-term sustainability.

5.2 Discussion of method

The research approach using semi-structured interviews was effective for studying the study's exploratory nature. The interviews dynamically let interviewees present personal experiences and work-related knowledge about reusable packaging adoption. The research methodology provided detailed insights into field-specific barriers because it obtained information that quantitative approaches would probably overlook.

The research data collection methodology ran smoothly because all interviews were conducted through video conference platforms. The interviewees worked with the author and offered thoughtful feedback because of the semi-structured research design, which encouraged open exchanges. The author extended their interviews past the time limit because they had numerous questions about the topic, thus expanding the available data.

The data analysis through the thematic method worked well in discovering fundamental patterns automatically from interview responses. The inductive research design kept the coding procedure focused on original interviewee statements while avoiding restrictions from pre-set models. The study gained credibility and relevance through this approach because its themes emerged from observed realities rather than theoretical constructs alone.

The study used various methods to increase its validity and reliability measures. The designed interview questions considered the study research questions and theoretical models, and member checks validated that research interpretations matched participant meanings. The author documented their analysis methods to create an enduring trail, improving dependability and transparency and thus increasing methodological robustness.

Through its qualitative research design, the broader nature of the research problem was adequately understood. The research findings contribute important insights toward both

the development of academic knowledge and the practical implementation of reusable packaging systems in the FMCG industry, even though generalization requires further consideration.

6 Conclusions

The study explored the feasibility of transitioning from single-use to reusable packaging systems in the FMCG industry, focusing on the challenges and potential solutions associated with this shift. Qualitative research, including semi-structured interviews with business professionals, revealed essential obstacles such as customer behaviour, regulatory complexity, and financial limitations. It also highlighted practical solutions to these problems.

The findings revealed that high initial investments in durable materials, reverse logistics, and cleaning infrastructure pose significant financial challenges for companies adopting reusable packaging. These costs are compounded by the need for research and development to design packaging that meets durability and hygiene standards. Regulatory fragmentation across European markets further complicates the transition, as companies must navigate varying compliance requirements, hindering the scalability of reusable systems. Consumer resistance, driven by convenience preferences and misconceptions about hygiene, also presents a critical barrier to widespread adoption.

Despite these challenges, the study identified several solutions. Companies mitigate financial risks through phased pilot programs and industry collaborations to share infrastructure costs. To address regulatory hurdles, businesses are forming internal task forces to monitor policy developments and prioritize markets with supportive legislation. Consumer engagement strategies, such as awareness campaigns, incentives, and clear return instructions, shift behaviour toward reusable packaging. Furthermore, technological innovations and cross-sector partnerships are also emerging as key enablers for scalable and cost-effective reusable systems.

In conclusion, the shift toward reusable packaging in the FMCG industry is necessary and an opportunity to align with circular economy principles. By addressing financial, regulatory, and behavioural barriers through collaborative and innovative approaches,

businesses can accelerate the transition, contributing to sustainability goals while maintaining operational efficiency. The study's insights offer a foundation for further academic and practical exploration into the evolving landscape of sustainable packaging.

6.1 Limitations of the study

While this study provides valuable insights into the challenges and solutions associated with transitioning from single-use to reusable packaging in the FMCG industry, several limitations must be acknowledged. The study mainly concentrated solely on Europe as its market research; therefore, any findings become less suitable when applied outside European regulatory frameworks and consumer behaviours, or economic conditions. European sustainability norms and environmental guidelines do not align with the broader realities of sustainability readiness levels across North American markets, alongside Asian markets and economies in development. Additionally, the study faced difficulties due to its use of voluntary participation because it opened space for selection bias. The participants who agreed to join probably spent considerable time working on sustainable issues, so they might not adequately represent the larger FMCG sector. Interviews produced beneficial insights, yet the study lacked verification mechanisms for behavioural information about consumer practices because it did not include observational or longitudinal components.

A significant challenge arises from using a limited number of participants in this study. The qualitative method yielded detailed insights through a few interviews with employees from the FMCG sector and packaging supplier organizations. The intentional participant selection method used expert professionals, but did not guarantee a comprehensive representation of industrial viewpoints.

6.2 Suggestions for further studies

Further research can advance the understanding of reusable packaging systems in the FMCG industry through the identified further studies discussed. The research needs to measure the implementation patterns of reusable packaging systems between various global markets. This research primarily studied European markets. However, extra

investigation across North America, Asia, and emerging economic areas would reveal essential data about how different infrastructure systems, consumer routines, and regulatory environments influence reusable package viability. The research would create an understanding of successful management approaches businesses can implement across various markets with different economic structures and cultural backgrounds, and find the differences between each area.

Moreover, studying consumer psychology through behavioral economics research would highlight additional valuable findings. The research established consumer resistance as a primary obstacle, but further investigation is needed to understand the underlying motivations and barriers influencing the acceptance of reusable packaging. Therefore, a survey could explore how different age groups respond to reusable packaging. For example, by designing simple questions about convenience perceptions, hygiene concerns, and willingness to pay, the author could identify general differences that are not fully grasped in this study.

Research on reusable packaging systems should focus on the comparison between Finland and other European countries by emphasizing national differences in recycling culture and infrastructure, as well as how each country uses potential digital tools for technology, such as RFID for improving return systems or AI-driven logistics for optimizing cleaning and redistributing networks.

References

Adams, W. C. (2015). Conducting Semi-Structured Interviews. *Handbook of Practical Program Evaluation: Fourth Edition*, 492–505. https://doi.org/10.1002/9781119171386.CH19

Ahmad, S. , W. S. , I. S. , G. S. , S. A. , & F. Z. (2019). *Journal of Evidence-Based Medicine and Healthcare*. https://www.jebmh.com/

Alan Bryman. (2016). *Social Research Methods* (5th ed.). Oxford University Press.

Auras, Rafael., & Selke, S. E. M. . (2022). *Life Cycle of Sustainable Packaging* (1st ed.). Wiley.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706QP063OA

Brink, H. I. (1993). Validity and reliability in qualitative research. *Curationis*, *16*(2), 35–38. https://doi.org/10.4102/CURATIONIS.V16I2.1396

BSI. (2004). *BS EN 13429:2004 Packaging. Reuse. 3*. https://shop.bsigroup.com/ProductDetail?pid=000000000030094797

Coelho, P. M., Corona, B., ten Klooster, R., & Worrell, E. (2020). Sustainability of reusable packaging–Current situation and trends. *Resources, Conservation and Recycling: X*, *6*. https://doi.org/10.1016/J.RCRX.2020.100037

Coles, R., & Kirwan, M. (2011). Food and Beverage Packaging Technology: Second Edition. *Food and Beverage Packaging Technology: Second Edition*. https://doi.org/10.1002/9781444392180

Debeaufort, F., Galić, Kata., Kurek, Mia., Benbettaieb, Nasreddine., & Ščetar, Mario. (2021). *Packaging materials and processing for food, pharmaceuticals and cosmetics* .

Directive - 94/62 - EN - EUR-Lex. (n.d.). Retrieved March 16, 2025, from https://eur-lex.europa.eu/eli/dir/1994/62/oj/eng

Ellen MacArthur Foundation. (2017). *What is a circular economy? | Ellen MacArthur Foundation*. https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

Ellen MacArthur Foundation. (2019). *Reuse – rethinking packaging*. https://www.ellenmacarthurfoundation.org/reuse-rethinking-packaging

Ertz, M., Huang, R., Jo, M. S., Karakas, F., & Sarigöllü, E. (2017). From single-use to multi-use: Study of consumers' behaviour toward consumption of reusable containers. *Journal of Environmental Management*, *193*, 334–344. https://doi.org/10.1016/J.JENVMAN.2017.01.060

EUR-Lex - 52021XC0607(03) - EN - EUR-Lex. (n.d.). Retrieved March 16, 2025, from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021XC0607%2803%29&qid=1742138458985

EUR-Lex - 52022PC0677 - EN - EUR-Lex. (n.d.). Retrieved March 16, 2025, from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0677

European Commission. (2018). *Deposit refund schemes - European Commission*. https://environment.ec.europa.eu/economy-and-finance/ensuring-polluters-pay/deposit-refund-schemes_en

European Commission. (2019). *Single-use plastics - European Commission*. https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en

Eurostat. (2021). *Packaging waste statistics - Statistics Explained*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal 2008 204:6*, *204*(6), 291–295. https://doi.org/10.1038/bdj.2008.192

Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? *Field Methods*, *18*(1), 59–82. https://doi.org/10.1177/1525822X05279903

Hennink, M. M. ., Hutter, Inge., & Bailey, Ajay. (2020). *Qualitative research methods*. https://www.perlego.com/book/3013435/qualitative-research-methods-pdf

Jain, P., & Hudnurkar, D. M. (2022). Sustainable packaging in the FMCG industry. *Cleaner and Responsible Consumption*, *7*, 100075. https://doi.org/10.1016/J.CLRC.2022.100075

John W. Creswell. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

John W. Creswell, & Cheryl N. Poth. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4th ed.). SAGE Publications.

Kenton, W. (2024). *Fast-Moving Consumer Goods (FMCG) Industry: Definition, Types, and Profitability*. https://www.investopedia.com/terms/f/fastmoving-consumer-goods-fmcg.asp

Kirwan, M. J. (2007). Solid Fibreboard Packaging. *Paper and Paperboard Packaging Technology*, 373–385. https://doi.org/10.1002/9780470995877.CH12

Kuzmina, K., Prendeville, S., Walker, D., & Charnley, F. (2019). Future scenarios for fast-moving consumer goods in a circular economy. *Futures*, *107*, 74–88. https://doi.org/10.1016/J.FUTURES.2018.12.001

Maende, J. J. (2018). *EFFECT OF PRODUCT PACKAGING ON CONSUMER CHOICES OF FOOD & BEVERAGE PRODUCTS, NAIROBI COUNTY, KENYA A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS IN BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI*.

Mashuri, S., Sarib, M., Rasak, A., Alhabsyi, F., & Ruslin. (2022). *Semi-structured Interview: A Methodological Reflection on the Development of a Qualitative Research Instrument in Educational Studies Ruslin*. *12*(1), 22–29. https://doi.org/10.9790/7388-1201052229

Muranko, Ż., Tassell, C., van der Laan, A. Z., & Aurisicchio, M. (2021). Characterisation and Environmental Value Proposition of Reuse Models for Fast-Moving Consumer Goods: Reusable Packaging and Products. *Sustainability 2021, Vol. 13, Page 2609*, *13*(5), 2609. https://doi.org/10.3390/SU13052609

Murray, A., Skene, K., & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, *140*(3), 369–380. https://doi.org/10.1007/S10551-015-2693-2/METRICS

Newhart, Michelle., & Patten, M. L. . (2023). *Understanding research methods : an overview of the essentials*. 514.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, *16*(1). https://doi.org/10.1177/1609406917733847/ASSET/E3E580C8-

AF29-4F8E-A810-D37473EEEE85/ASSETS/IMAGES/LARGE/10.1177_1609406917733847-FIG4.JPG

Nwabekee, U. S., Abdul-Azeez, O. Y., Agu, E. E., & Ijomah, T. I. (2024). Challenges and opportunities in implementing circular economy models in FMCG Industries. *Https://Frontlinejournals.Com/Ijfrst/Sites/Default/Files/IJFRST-2024-0048.Pdf*, *3*(2), 073–091. https://doi.org/10.56355/IJFRST.2024.3.2.0048

Packaging and packaging waste | EUR-Lex. (n.d.). Retrieved March 21, 2025, from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=legissum:l21207

Pålsson, H. (2018). *Packaging Logistics: Understanding and managing the economic and environmental impacts of packaging in supply chains*. 248. https://www.perlego.com/book/1589458/packaging-logistics-understanding-and-managing-the-economic-and-environmental-impacts-of-packaging-in-supply-chains-pdf?queryID=8bc3695a1f31138f9f2f4bb49c40b285&index=prod_BOOKS&gridPosition=1&searchType=title

Patton, M. Q. (2002). Qualitative research and evaluation methods. In *Qualitative Inquiry* (Vol. 3rd). https://doi.org/10.2307/330063

Robertson, G. L. (2009). Food Packaging and Shelf Life. In *Food Packaging and Shelf Life: A Practical Guide* (1st ed.). CRC Press. https://doi.org/10.1201/9781420078459-6

Soltis, J. F. (1989). The ethics of qualitative research. *Internation Journal of Qualitative Studies in Education*, *2*(2), 123–130. https://doi.org/10.1080/0951839890020203

Srinivasan, S., & Lu, W. F. (2014). Development of a Supporting Tool for Sustainable FMCG Packaging Designs. *Procedia CIRP*, *15*, 395–400. https://doi.org/10.1016/J.PROCIR.2014.06.079

Svend Brinkmann, & Steinar Kvale. (2015). *InterViews: Learning the Craft of Qualitative Research Interviewing* (3th ed.). SAGE Publications.

The Pew Charitable Trusts and Systemiq. (2020). *Breaking The Plastic Wave: Stop Plastic Pollution | SYSTEMIQ*. https://www.systemiq.earth/breakingtheplasticwave/

United Nations Environment Programme. (n.d.). *Turning off the Tap: How the world can end plastic pollution and create a circular economy | UNEP - UN Environment Programme*. Retrieved March 16, 2025, from https://www.unep.org/resources/turning-off-tap-end-plastic-pollution-create-circular-economy

Vartan, G. R. (1987). *Winning the supermarket war: packaging as a weapon. Marketing Communications: Vol. 12(5)*.

White, K., Lin, L., Dahl, D. W., & Ritchie, R. J. B. (2016). When do consumers avoid imperfections? Superficial packaging damage as a contamination cue. *Journal of Marketing Research*, *53*(1), 110–123. https://doi.org/10.1509/JMR.12.0388/SUPPL_FILE/WHEN.PDF

Yaro, L. M. (2015). An Overview of Branding and Packaging Of a Company Product (A Case Study of British American Tobacco Company Zaria)\n. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, *5*(1), 35–49. http://www.iosrjournals.org/iosr-jrme/papers/Vol-5%20Issue-1/Version-1/G05113549.pdf

Yvonna S. Lincoln, & Egon G. Guba. (1985). *Share Share Naturalistic Inquiry*. SAGE Publications.

Zink, T., & Geyer, R. (2017). Circular Economy Rebound. *Journal of Industrial Ecology*, *21*(3), 593–602. https://doi.org/10.1111/JIEC.12545

Appendix 1: Interview guide for FMCG industry professionals

The thesis

I am an Arcada University of Applied Sciences student studying International Business, majoring in Logistics. This thesis, supervised by Ms. Erica Adlercreutz, with the interview guide, is designed to support the qualitative research process for **The Transition from Single-use to Reusable Packaging Systems in the FMCG Industry**. This thesis investigates how FMCG companies across Europe are transitioning from single-use to reusable packaging. The research aims to understand the drivers, barriers, and industry practices that shape this transition. The study also examines the role of packaging suppliers in developing materials and solutions that align with sustainable packaging goals.

This research addresses one key question:

1. What are the key challenges in transitioning from single-use to reusable packaging systems in the FMCG industry?

The empirical data for this study will be collected through semi-structured interviews with professionals directly involved in packaging decisions and supply chain management. The insights from these interviews will contribute to a broader understanding of how businesses can successfully implement reusable packaging models.

The respondents

The respondents for this study are selected based on their experience and expertise in packaging and supply chain management within the FMCG industry. Supply chain managers from FMCG companies will provide insights into the logistics, operational, and financial challenges of reusable packaging. Packaging suppliers will offer perspectives on material innovation, production scalability, and regulatory compliance. Participation in this study is voluntary; all responses will be treated confidentially. Company names and personal details will be anonymized to ensure privacy. In addition, interviewees will have the opportunity to examine their transcripts and request that their

information be deleted. A brief will be given following the interview to explain how the data will be handled and applied in the research.

The interview

Place and date of the interview:

Company:

Name of the respondent:

Position of the respondent:

The questions

1. Introduction

- Can you briefly introduce yourself and your role and how many years of experiences within the company?
- How is your company currently involved in packaging and sustainability initiatives?

2. Transition to Reusable Packaging

- What prompted your company to transition from single-use to reusable packaging?
- What types of reusable packaging systems have you implemented or planned to implement?

3. Logistics & Operational Challenges

- How has the transition impacted your supply chain operations?
- What are the biggest logistical challenges (e.g., collection, return systems, cleaning, transportation)?
- How do you manage reverse logistics for reusable packaging?
- Have there been any bottlenecks in the distribution or return process?

4. Cost and Financial Considerations

- How does the cost of reusable packaging compare to single-use packaging in terms of investment and long-term savings?
- Have you implemented any cost-sharing models with suppliers, retailers, or consumers?

5. Regulatory Compliance and Industry Standards

- How have EU and national regulations (e.g., the Packaging and Packaging Waste Directive) impacted your transition to reusable packaging?
- What challenges exist in meeting compliance requirements?

6. Consumer and Retailer Response

- How have retailers and consumers responded to reusable packaging initiatives?
- What measures has your company taken to encourage consumer participation in return systems?

7. Future Developments and Innovations

- What role do technology and digital tracking (e.g., RFID, blockchain, AI logistics) play in managing reusable packaging systems?
- What innovations or process improvements are needed to scale reusable packaging?
- What advice would you give to other supply chain managers considering this transition?

The ending

After the interview, I will express my sincere gratitude to the respondent for taking the time to participate in this research. I will acknowledge their valuable insights and contributions, emphasizing how their expertise will help in understanding the transition from single-use to reusable packaging in the FMCG industry.

Additionally, I will reassure the respondent that their responses will be treated with confidentiality and anonymity (if requested) and will only be used for academic purposes. I will also offer to share a summary of the research findings once the study is complete, should they be interested.

I want to thank you again for sharing your time with me today and for your invaluable contributions. I look forward to keeping in contact with you and maybe talking about the results soon.

Appendix 2: Interview guide for packaging material suppliers for FMCG industry

The thesis

I am an Arcada University of Applied Sciences student studying International Business, majoring in Logistics. This thesis, supervised by Ms. Erica Adlercreutz, with the interview guide, is designed to support the qualitative research process for **The Transition from Single-use to Reusable Packaging Systems in the FMCG Industry**. This thesis investigates how FMCG companies across Europe are transitioning from single-use to reusable packaging. The research aims to understand the drivers, barriers, and industry practices that shape this transition. The study also examines the role of packaging suppliers in developing materials and solutions that align with sustainable packaging goals.

This research addresses one key question:

2. What are the key challenges in transitioning from single-use to reusable packaging systems in the FMCG industry?

The empirical data for this study will be collected through semi-structured interviews with professionals directly involved in packaging decisions and supply chain management. The insights from these interviews will contribute to a broader understanding of how businesses can successfully implement reusable packaging models.

The respondents

The respondents for this study are selected based on their experience and expertise in packaging and supply chain management within the FMCG industry. Supply chain managers from FMCG companies will provide insights into the logistics, operational, and financial challenges of reusable packaging. Packaging suppliers will offer perspectives on material innovation, production scalability, and regulatory compliance. Participation in this study is voluntary; all responses will be treated confidentially. Company names and personal details will be anonymized to ensure privacy. In addition, interviewees will have the opportunity to examine their transcripts and request that their

information be deleted. A brief will be given following the interview to explain how the data will be handled and applied in the research.

The interview

Place and date of the interview:

Company:

Name of the respondent:

Position of the respondent:

The questions

1. Introduction

- Can you briefly introduce yourself and your role and how many years of experiences within the company?
- How is your company currently involved in packaging and sustainability initiatives?

2. Transition to Reusable Packaging

- Have you seen increased demand for reusable packaging from FMCG companies?
- What types of reusable packaging solutions do you offer, and how do they compare to single-use alternatives?

3. Material and Design Considerations

- What materials are commonly used for reusable packaging, and how do they compare in terms of durability, cost?
- How do you ensure that reusable packaging remains hygienic, safe, and functional over multiple use cycles?
- What are the biggest challenges in designing packaging that is both reusable and lightweight?

4. Supply Chain and Manufacturing Challenges

- What are the key production challenges in scaling up reusable packaging?
- How do manufacturing costs compare between single-use and reusable packaging?
- What logistics and infrastructure changes are necessary for large-scale adoption of reusable packaging?

5. Regulatory and Industry Compliance

- How do European regulations influence your material choices and packaging designs?
- Are there standardized industry guidelines for reusable packaging, and how does your company ensure compliance?

6. Market Adoption and Future Trends

- What factors influence FMCG companies in choosing reusable packaging suppliers?
- Have there been successful business cases where reusable packaging has been implemented at scale?
- What innovations do you foresee in the future for more sustainable, cost-effective packaging solutions?

7. Closing Remarks

- What advice would you give to FMCG companies considering a transition to reusable packaging?
- Do you collaborate with FMCG brands to co-develop packaging solutions?
- Is there anything else you would like to add regarding the future of reusable packaging?

The ending

After the interview, I will express my sincere gratitude to the respondent for taking the time to participate in this research. I will acknowledge their valuable insights and contributions, emphasizing how their expertise will help in understanding the transition from single-use to reusable packaging in the FMCG industry.

Additionally, I will reassure the respondent that their responses will be treated with confidentiality and anonymity (if requested) and will only be used for academic purposes. I will also offer to share a summary of the research findings once the study is complete, should they be interested.

I want to thank you again for sharing your time with me today and for your invaluable contributions. I look forward to keeping in contact with you and maybe talking about the results soon.

Appendix 3: Consent form

Agreement on Informed Consent

RESEARCH: The Transition from Single-use to Reusable Packaging Systems in the FMCG Industry by Ngoc Diep Tran

PURPOSE OF RESEARCH: The study aims to explore the feasibility of transitioning from single use to reusable packaging systems in the FMCG industry, focusing on the challenges associated with this shift. The study seeks to identify key barriers, such as logistical complexities, financial constraints and consumer behaviour that hinder the adoption of reusable packaging systems. The study is designed to answer the following question.

• I have received, read and understood the information given to me about the research and its goals.

• I have received sufficient information on the gathering, processing and reporting of data.

• All answers and other divulged information will be treated as confidential and individual interviewees will not be identifiable from the final research report.

• All the gathered information will be securely erased after the research report has been published

• I am aware that the interviewer is recording the interview in order to improve the reliability of the research.

• I understand that the interviewer may contact me after the interview in case clarifications are needed

I hereby consent to being interviewed in accordance with the above (the interviewee signs):

Signature

_____

Name and contact information

_____

I hereby promise to treat any information divulged by the interviewee in accordance with the above (the interviewer signs)

Signature

_____

Name and contact information

_____

Time and

place:_____

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