The Reverse Supply Chains of the Fast-Moving Consumer Goods:
The Impacts of Product Returns on Reverse Supply Chains in Sweden

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Abstract

The unceasing ambition of companies to enhance their profitability, capture novel markets, and address the diverse and evolving needs of customers has led to an irrational surge in production and the exploitative depletion of natural resources. This unwarranted increase in production has, in turn, been accompanied by a rise in product returns by consumers, which, upon reverting to their original sources through the supply chain, has compounded the complexities of the supply chains and precipitated new pressures and burdens on the companies and their supply chains, necessitating their adept management. Likewise, the fast-moving consumer goods sector (FMCG) in Sweden has been experiencing an increasing number of product returns, which is a significant concern for both manufacturers and retailers. This thesis aims to investigate the drivers of product returns and their impact on the existing B2B supply chains to provide recommendations for reducing their impact and frequency. The research methodology includes a review of the previous scientific literature related to the topic, participant observations, and semi-structured interviews with key stakeholders in the industry. A qualitative approach has been adopted using a case study method, and thematic analysis was utilized. The results show that the main drivers for product returns between businesses in the Swedish FMCG sector are quality, contracts, customer service, and legislation, all of which contribute to disruptive effects within the existing B2B supply chains. Furthermore, the study reveals four types of disturbances associated with product returns, including logistical, sustainability, operational, and cost and value-related disruptions. This thesis provides insights into the challenges and opportunities associated with product returns in the Swedish FMCG sector and highlights the need for suppliers to adopt a proactive approach to managing returns to remain competitive in the market.
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Jönköping, May 2023

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M. Hassan Dachan

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<td>European Union</td>
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<td>Fast moving consumer goods</td>
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1 Introduction

1.1 Background

The intricacies of supply chain management (SCM) have had a significant impact on the worldwide reverse logistics (RL) of products, thereby intensifying the difficulties that organizations face in their pursuit of heightened profitability and in meeting the escalating needs of their clientele. Over the past three decades, fluctuating economic conditions, evolving consumer preferences, and diverse instances of natural and human-induced catastrophes have rendered supply chains (SCs) more susceptible to an array of disruptions, thereby further compounding these complexities (Tang, 2006). Thus, the management of SCs constitutes a critical concern for organizations, given its impact on their ability to furnish the appropriate products and services to the consumers at the right juncture (Nozari et al., 2022) and on their competitive positioning and customer contentment (Ghande et al., 2017). Also, the unceasing ambition of companies to enhance their profitability, capture novel markets, and address the diverse and evolving needs of customers has led to an irrational surge in production and the exploitative depletion of natural resources. This unwarranted increase in production has, in turn, been accompanied by a rise in product returns (PRs) by consumers, which, upon reverting to their original sources through the supply chain (SC), has compounded the complexities of the SCs and precipitated new pressures and burdens on the companies and their SCs, necessitating their adept management.

Regrettably, firms have largely disregarded the potential value of PRs and failed to examine their rationale meticulously. Historically, PRs have long been seen by companies as a nuisance (Guide Jr & Van Wassenhove, 2006), a necessary evil, a hassle, a drain on overall profitability (Petersen & Kumar, 2009), or a negligible cost resulting from performing business (Frei et al., 2020). Generally, PRs decrease the current firm’s assets because of lower inventory values of returned products, more order cycle times due to the reshipment of ordered items, and lessened sales revenues due to lost sales (Foscht et al., 2013). Additionally, they compel firms to expend more resources on RL and lead to revenue losses. However, PRs can generate value for firms by enabling them to recover what they can from the returned items (Miranda & Jegasothy, 2009) and add value to the companies since it reduces the customer purchase risk (Petersen & Kumar, 2009). Also, they can help firms enhance the features of their products and transform returns into successful sales (Frei et al., 2020). Furthermore, PRs can be used as a metric to achieve objectives and optimize profitability (Petersen & Kumar, 2009). Hence, PRs represent
a value stream for firms from product recovery activities (reselling, reconditioning, and remanufacturing), and therefore firms must consider it from a business-economics perspective instead of making it a practice in reducing costs (Guide et al., 2005).

The phenomenon of PRs has gained significant attention from researchers and companies due to the remarkable increase in their value over the years. In 1999, for example, PRs value was confirmed to be 6% of total sold merchandise, which accounts for $38 billion in the U.S. (Rogers & Tibben-Lembke, 2001). Also, in 2004, the Centre for Business Education and Research at Michigan State University reported that the value of returned consumer goods was around $35 billion in the U.S. only (Miranda & Jegasothy, 2009). Since those records, the PRs value has increased enormously. In 2006, the total value of commercial products returned for any reason within 90 days of the sale had exceeded $100 billion annually in the U.S. (Guide et al., 2006). The focus has not only been on the value of returns but also on their operational costs, which are typically exorbitant. In 2007, the returned products led to a $100 billion loss in annual sales and RL costs and the average profit loss for retailers or manufacturers was around 3.8% (Petersen & Kumar, 2009). Return costs increased dramatically in the U.K. and reached £60 billion a year for manufacturers in 2017, of which £20 billion was generated by online sales and varied between 9% to 15% of the total revenue (Frei et al., 2020). Consequently, PRs became the Achilles' heel for businesses since the cost and the volume of PRs are booming year after year, and it became imperative to study the drivers behind this phenomenon.

The rapid proliferation of e-commerce has led to a surge in both the cost and frequency of PRs (Frei et al., 2020). Technological advancements changed human lives and consumption habits, and e-businesses benefited from it and grew significantly. The 'Cocooning' phenomenon is spread broadly over the world due to different reasons, and people started preferring online shopping rather than going to stores (Foscht et al., 2013). Global e-commerce continues to grow rapidly. The latest sales number of e-commerce reached $25.6 billion in 2020, and this figure accounts for 30% of the global gross domestic product (GDP). In detail, business-to-business (B2B) e-commerce sales reached $21.2 billion globally (24.87% of the global GDP), and it represents the majority of all e-commerce sales, while in the retail industry, the e-commerce sales reached $3914 billion in 2020 (Amornkitvikai et al., 2022). Unfortunately, online shopping results in a higher number of PRs. The returns from online purchases are double to quadruple that of physical store returns (Tian & Sarkis, 2021). Online shopping offers consumers the opportunity to purchase a wide range of products remotely, increasing access
and convenience while enabling firms to reach customers in new markets. However, the COVID-19 pandemic, which led to the closure of many physical stores, further accelerated the growth of e-commerce, resulting in increased PRs as consumers were unable to physically examine products before purchase. This increased the workload for the companies and the costs of RL due to the high rate of PRs (Ambilkar et al., 2022). Thus, contemporary firms must minimize PRs by determining the causative factors to remain competitive in turbulent and fierce markets.

The aspiration of this thesis is to offer additional practical and theoretical knowledge related to PRs in SCs, particularly in the fast-moving consumer goods (FMCG) sector, and their impact on the SCs. The FMCG sector is recognized widely as one of the world's enormous and rapidly growing sectors. It participates remarkably in the growth of countries' economies. However, the sector is also known to be highly volatile and competitive, with strict regulations and rapid technological advancements. FMCG products are the most consumed products in the world. It includes short-lived products with continuous functions in daily life, such as food, beverages, personal care, and household items (Mulyawan et al., 2022). Those facts gave customers the ability not to tolerate any type of product defect or problem (Makaleng & Hove-Sibanda, 2022). Due to the nature of this sector's products, PRs are considered very high and entail effective RL management. PRs in the FMCG sector cost countless money since most of the returned products are disposed of. Therefore, firms must adopt effective RL programs to increase their brand’s cumulative value, reduce operational costs, meet environmental goals, and increase customer satisfaction (Makaleng & Hove-Sibanda, 2022). For that intent, a qualitative case study will be conducted to explore the drivers of PRs between manufacturers and retailers by collecting empirical data through interviews with experienced managers from the sector and personal observation in one of the selected manufacturing firms.

1.2 Case study: FMCG Sector in Sweden

Studying the PRs in the B2B supply chains in the Swedish FMCG sector is essential for several reasons. Firstly, the sector plays a vital role in the Swedish economy, with sales of food and beverages alone rising by SEK 9 billion in 2021. According to Statistiska Centralbyrån (2022), this growth was driven primarily by a 2.5% increase in sales volume and a 0.4% rise in prices. Secondly, the sector is highly competitive, as both local and multinational corporations contributing significantly to it. Notably, the sales of local retailers alone exceed eight billion Euros, highlighting the importance of understanding the sector's dynamics (Statista, 2020).
A precise understanding of the PRs context is the cornerstone for FMCG firms to maintain profitability and provide appropriate customer services. However, PRs present a significant challenge for manufacturers in the sector, as they mainly focus on producing and selling products to customers and ignore the impact of PRs, resulting in lost opportunities to recapture value and build customer loyalty (Mollenkopf et al., 2011). Hence, gaining practical knowledge about PRs from practitioners working within the B2B supply chains is crucial to determining the drivers behind PRs in the FMCG sector. Specifically, focusing on PRs and RL activities in Sweden’s FMCG supply chains will enhance the current knowledge in the field. Analysing PRs in the Swedish FMCG market is imperative since it reveals the intricacies of RL activities and can aid in devising tactics to enhance operations and curtail expenses for businesses functioning in this industry.

This study will contribute to the existing body of knowledge by identifying the complexities of PRs and RL activities within the FMCG sector. This specific area's examination can inform the development of strategies to improve operations and reduce costs for businesses operating in this sector. Therefore, studying B2B supply chains in the case sector is critical for understanding the sector's dynamics, determining the reasons behind PRs, and developing strategies to manage PRs.

### 1.3 Problem Discussion

PRs have been identified as a significant challenge for firms since they affect their revenues and operational costs and create a substantial financial burden (Lee, 2015). Traditionally, firms regarded PRs as a cost centre and a cause for customer dissatisfaction. Moreover, most firms handled the PRs on an ad-hoc basis and did not realise the cost associated with these returns (Shear et al., 2006). PRs became a “trillion dollars” problem since PRs grew exponentially as customers returned products for any reason (Tian & Sarkis, 2021). Although manufacturers and retailers took the necessary measures to improve the quality and safety of their products to reduce PRs, a vast majority of the returned products are reintroduced into the SCs even without being experienced (Lee, 2015).

RL is a complex process that deals with uncertainty, involving various types and quantities of products that may be returned at different stages of their life cycles (Srivastava & Srivastava, 2006). The primary objective of RL is to recover value within the SC, which differentiates it from waste management which mainly involves collecting and processing waste without any economic value to recover from the products (M. de Brito & R. Dekker, 2003). However,
reverse supply chains (RSCs) are often fragmented and lack clear end-to-end SC visibility, with multiple managers focusing on achieving their firm's efficiencies and economies of scale (Guide et al., 2005). The fast growth of PRs volumes increases the operational cost of RSCs and makes them more complex (Hung Lau & Wang, 2009). Thus, understanding these complexities in RL is particularly crucial and requires additional and deeper study to know the reasons that drove these processes and created disturbances in SCs.

Based on an extensive review of the product returns-related works of literature, the previous research on PRs and RL management is sparse (Petersen & Kumar, 2009). Moreover, there is a dearth of theory and empirical evidence in the literature regarding well-established concepts of PRs drivers. Nevertheless, a review of the current literature illustrates that most of the existing research focuses on the operational and management aspects of PRs. In their recent review, Ambilkar et al. (2022) identified six categories of PRs literature, which include product recovery, forecasting PRs, consumer behaviour, return policy, uncertainty, and technology. These categories provide a useful framework for understanding the current state of research on PRs.

Further, the current literature examined specific topics related to the PRs phenomenon. The most studied subjects in this field are related to RL, closed-loop supply chains, and green SCM (Guide Jr & Van Wassenhove, 2006; Rogers & Tibben-Lembke, 2001; Srivastava, 2007). Another branch of literature focused on the behavioural aspects of customers and discussed the motivation for order purchases and reasons for PRs (Foscht et al., 2013). In their study on the return behaviours of customers, Abdulla et al. (2019) developed a conceptual framework that includes return policy, consumer behaviour, planning and execution, and return management. Other research, such as that conducted by Janakiraman et al. (2016), has examined the effect of the return policy on return decisions and how it affects the purchase decision rather than the returns themselves.

To summarize, the existing literature fell short of elucidating the drivers of PRs among SC members, particularly between manufacturers and retailers, and how they impact the SCs. Also, Ambilkar et al. (2022) identified forecasting PRs in various industries as a potential area for future research. In line with that, a significant research gap regarding the drivers of PRs in complex SCs, as well as future research possibilities, has been identified. This thesis addresses the gap in the current literature concerning the drivers of PRs and the impact of these returns along with the RL on the SCs. Additionally, this thesis aims to raise awareness among
managers and practitioners in the FMCG sector about the disruptive impact of PRs on their SCs. It provides insights into the uncertainties and challenges caused by PRs and offers recommendations for firms to adjust their operations for improved efficiency and effectiveness. Through a better understanding of PRs, firms can predict market needs, reduce overproduction and overstocking, and ultimately minimize waste management activities. This is a collective responsibility of the three partners in the FMCG supply chain, namely manufacturers, distributors, and retailers, who need to collaborate and develop more sustainable operations for the benefit of all stakeholders.

1.4 Research Purpose

The purpose of this thesis is to analyse the PRs in the SCs for fast-moving consumer goods. Particularly to identify the factors that drive PRs for suppliers operating in Sweden and explore the relationship between PRs and disturbances in the SC.

1.5 Research Questions

To achieve the purpose of this thesis, the following research questions will be answered:

*RQ1*- What are the drivers of product returns between firms in the Swedish FMCG supply chains?

*RQ2*- How do product returns and reverse logistics activities impact the FMCG supply chains?

1.6 Delimitations

The study aspires to explore PRs drivers within the Swedish FMCG sector and, therefore, does not consider other sectors in the same country or other countries. Since the SC includes different members, this thesis’s primary focus will be on the PRs between the manufacturer, distributor, and retailers in the B2B context that trigger RL activities between them. Hence, the research will not consider the drivers of PRs in Business-to-Consumer (B2C) or the manufacturer's returns to their raw material suppliers. This limitation was created due to the purpose of this thesis and its major objective. Also, the sample of this research will be chosen from one market (Sweden) to avoid any disputes in culture, legislation, regulations, and geographical attributes that might affect the research results.
2 Literature Review

2.1 Supply Chain Management and FMCG Sector

SCM is concerned with all organizational activities, from sourcing to distribution of products and services (Nozari et al., 2022). PRs among businesses have been specifically acknowledged in the FMCG sector since they are closely related to RL. The FMCG sector is considered one of the world's immense and quickly growing sectors, with remarkable impacts on the economic growth of countries (Astete, 2022).

Furthermore, SCM deal with PRs to sustain their competitive advantage, which requires additional effort and knowledge due to the regulations, environmental factors, and customer satisfaction (Erol et al., 2010). With increasing consumption and growing demand for various products and services in the past century, many organizations felt the need to reshape their SCs to achieve more profitable businesses (Rajeev et al., 2017). According to Mentzer et al. (2001), members that form a SC are categorized as raw material producers, component manufacturers, product assemblers, wholesalers, retailers, and transportation firms who carry out the upstream and downstream flow of products and create value. Generally, SC operations handle the transportation, efficient allocation of materials and resources including labour and storage spaces, and financial and information flows (Bonassina et al., 2018). Nowadays, SCs are also responsible for managing PRs and are involved with value recovery practices as well as proper disposal of unrecoverable products. Consequently, the management of SCs has become a fundamental concern for many businesses.

Mentzer et al. (2001) classified SCM under three categories and described it as a management philosophy, implementation of a management philosophy, and a set of management processes. Activities of SCM are described as integrated behaviour, mutually sharing information, mutually sharing risks and rewards, cooperation, the same goal and focus on serving customers, integration of processes, and partners to build and maintain long-term relationships. Further, the process of SCM can be divided into distinct stages. Astete (2022) divided the SCM processes into; planning, sourcing, making, delivering, and returning. In active SCs, retailers and consumers comprise the magnitude of the returns to the manufacturer. For most organizations, SCs are known to be driven by forecasting rather than demand-driven and responsive. Christopher (2000) argued that to conduct successful SC operations and create a positive impact on customers, the firm's management must be capable of sensing and responding to customer demands.
In today’s world, SCs become more complex systems since firms started to implement new initiatives by extending their product variety and outsourcing their processes to third parties due to increasing demand and changing expectations (Tang, 2006). Moreover, a highly competitive business environment further increases SC complexity, making it increasingly difficult to achieve strategic business objectives (Bredell & Walters, 2007). Therefore, global SCs require high coordination with an uninterrupted influx of products, information and financial assets (Manuj & Mentzer, 2008). The research of Christopher (2000) discussed the lean, agile, or mixture of these strategies in managing SCs. The manufacturing firms might adopt a lean manufacturing system to reduce or eliminate the waste of resources and time during production and increase overall efficiency. This system works great when the demand is predictable and product variety is low. Conversely, global SCs operating in less predictable environments are required to be flexible in their SCM. In addition to lean and efficient production methods, manufacturing firms nowadays seek opportunities to minimize costs and create profit from returned products. The rapidly decreasing value of the product has forced SCs to consider this issue and take action to salvage the value of returned products. Thus, designing RSCs to manage these returns efficiently became crucial.

Additionally, green supply chains (GSC) have been drawing the industry’s attention over recent years. The management of a GSC handles manufacturing and remanufacturing, product handling, logistics, RL and waste management activities with a sustainable perspective (Srivastava, 2007). Sheu et al. (2005) stated that global companies do not take necessary measures to facilitate GSC, and real GSC are rare. Currently, the adoption of green practices in SCs become a necessity, and it is no longer an option for global production networks (Shaharudin et al., 2017). So, to build a GSC, companies first need to integrate environmental measures and pursue sustainable sourcing and waste reduction (Shaharudin et al., 2015). Sustainable practices such as green SCM also contribute to the circular economy by reusing, reproducing, transforming, recycling, and reducing waste (Frei et al., 2020).

### 2.1.1 The Fast-Moving Consumer Goods Sector

The FMCG sector encompasses products such as food, snacks, packaged drinks, milk, toiletries, and other household necessities (Mulyawan et al., 2022), which undergo several procedures and handling methods in both the forward and RL processes. In this sector, PRs are managed through RL activities, which involve processing and transporting products to their original sources for recovery or disposal. The importance of PRs management is amplified in
the FMCG sector due to regular purchasing activities, relatively low prices, high volume of goods in motion, increasing demand for products, product sensitivity, short lifecycles, and a low tolerance for problems (Astete, 2022). Given the significant contribution of the FMCG sector to the GDP of countries, RL has emerged as a pressing concern in this sector (Makaleng & Hove-Sibanda, 2022).

The drivers behind PRs in the FMCG sector have garnered significant attention due to their distinctive characteristics. Typically, the PRs process in this industry commences when a customer makes a claim to a supplier for various reasons, including expired or nearly expired products, order errors, and damaged stock. Subsequently, the supplier handles the claim by retrieving the products through RL (Yuliawati & Brilliana, 2022). Additionally, products can be contaminated by hazardous or restricted ingredients, leading to a recall for safety reasons. RL plays a crucial role in ensuring the collection and safe disposal of such products by the manufacturer. Effective product tracking throughout the SC is essential as it enables manufacturers to locate their products at any production, distribution, or consumption stage (Astete, 2022). Moreover, Bernon and Cullen (2004) identified several reasons for PRs in the FMCG sector, including forecast accuracy and demand variability, promotional activity, new product introduction, product range and safety stock policy, product life cycles, logistics trade-offs, purchasing policy, high on-shelf availability, cash flow management, customer (no fault found), and legislative factors. Noteworthy, the research of Singh and Misra (2018) suggested that the heavy reliance on demand forecast poses challenges for FMCG companies in responding to rapid changes, including PRs. Lastly, PRs in the FMCG sector may result from errors in orders, quantity, double shipments, incomplete shipments, problems in transportation, or inter-warehouse transfers (Anna Maria, 2015). Hence, the nature of FMCG products is a significant factor in the high volume and frequency of PRs.

2.1.2 Product Returns and Reverse Supply Chains

Returned products in SCs cannot be handled in the same way as how products are treated in forward logistics (Bai & Sarkis, 2013). This treatment requires more involvement from SC members to be successfully managed. Reverse product flow increases the costs and interaction within the SC. In 1999, the cost of managing PRs was estimated at $40 billion, and handling costs could reach up to $50 per product, which is up to three times higher than forward logistics costs (Min et al., 2006). Another research claims that reverse product flow costs up to nine times more than forward logistics and reduces profits by up to 35% (Hu, 2016). The reason
behind this dramatical increase is that collection, transportation, separation, inspection, storage and further treatments are not adjusted to fulfil the returns efficiently (Bai & Sarkis, 2013).

The research of Prahinski and Kocabasoglu (2006) defines a reverse supply chain (RSC) as an entity that concentrates on the reverse flow of products and materials with an effective and efficient approach. RSC processes consist of product acquisition, RL, inspection and disposition, reconditioning (refurbishment or remanufacturing), and marketing (distribution and sales) (Guide et al., 2005; Blackburn et al., 2004; Prahinski & Kocabasoglu, 2006).

RSC operations are expected to be sustained with a responsive or efficient approach. Many organizations see the time value of products on RSC operations, which can adversely affect the recovery process and decrease the recovered value. Therefore, a responsive RSC is an appropriate approach when dealing with rapidly value-decreasing products, while an effective RSC is an appropriate approach for products with a more stable value (Blackburn et al., 2004).

Further, Guide et al. (2005) explained that managers of RSC focus on cost-efficient practices, which tend to be slow and try to solve technical challenges of product refurbishment. Sometimes this approach is not enough to recover the maximum value from products, which is the goal of the RSC.

The plentiful number of PRs is pressing manufacturing companies to implement effective RSCs. Those chains play a significant role in increasing the firm's overall profitability (Guide & Van Wassenhove, 2001), enhancing the sustainability of a firm's operations, and pushing firms to focus on RSCs by launching recovery programs, such as reuse, repair, remanufacturing, remarking, and refurbishing (Shaharudin et al., 2015).

Additionally, according to Pishvae et al. (2011), SC network design is of great importance to strategic decisions in SCM, and the closed-loop supply chain (CLSC) concept is an integrated approach that addresses both forward and RSCs. Additionally, Shi et al. (2011) and Kannan et al. (2009) argued that the interest in CLSCs is growing, and it has attracted more attention from firms in recent years due to environmental concerns, government regulations, and increased awareness of natural resources limitations around the world. As contended by Govindan and Soleimani (2017), the evolution of SCs leads CLSCs to rise and consider end-of-life products as a value. Their research also showed that to fulfill customer demand, comply with the regulations, and create value from returned products; CLSCs design, plan, implement, control, and maintain an efficient flow of information and materials. In addition, they argued that
functional CLSC operations (Figure 1) consist of forward and RL activities between raw material suppliers, manufacturers, distributors, and customers while observing value recovery activities.

According to Guide and Van Wassenhove (2009), both end-of-life (EOL) and end-of-use (EOU) products are increasing the amount of waste, which is considered a loss of value. On the other hand, the same authors indicated that CLSCs aim to maximize value creation, considering the complete lifecycle of products since “CLSC management is the design, control, and operation of a system to maximize value creation over the entire life cycle of a product with the dynamic recovery of value from different types and volumes of returns over time” (Guide & Van Wassenhove, 2009). Similarly, Fleischmann et al. (2001) stated that the recovery of used products and materials has growing importance, and it helps to reduce waste and the cost of disposal. Also, it is vital to evaluate and utilize resources properly to reduce loss and increase efficiency. Recovery of by-products is also considered a way to create value and achieve sustainability. Lastly, Soysal (2016) argued that most modern SCs thrive to improve their sustainability performance by reducing their environmental impact. In addition, companies also constantly seek to reduce costs and increase overall efficiency in their operations. As a result, PRs drive manufacturing firms to embrace CLSC activities that impact the effectiveness of RSCs (Shaharudin et al., 2017).

Figure 1. The closed-loop supply chain (CLSC)

Source: Govindan and Soleimani (2017).
2.1.3 The Value Outcome of Product Returns

The value outcome (value creation) of PRs is the main result of innovative SCs that provide the chain members with a competitive advantage (Dapiran & Kam, 2017). The concept of value had special attention from various literature due to its benefits for customers, firms, and shareholders. Some of these benefits are; increased customer loyalty, business profitability, and propositions to the shareholder (Bourlakis et al., 2012). As company competition is over, competition is now between the SCs rather than the companies themselves. Nowadays, companies can increase their profitability and customer loyalty by building more efficient and responsive SCs. Thus, a company’s success depends on its ability to improve the total performance of the SC to provide value to customers and reduce waste, the main enemy of SCs (Cox, 1999).

According to Shamah’s (2013) research, there are seven types of activities that generate waste in SCs: overproduction, waiting time for the next process step, unnecessary transportation, overprocessing, excess inventory, unnecessary movements of employees, and defects. Therefore, PRs can be considered a significant factor in generating all the wasteful activities and reducing the value within the SCs. Moreover, SCs are trying to adapt the market changes and align the interests of all SC members to become the best value SCs. Such chains consider the structural shifts in the market and modify the design and strategies of the SC to manage these changes. Further, those chains have specific competitive attributes of speed, quality, cost, and flexibility, and the balancing between these factors is imperative to the ability of the chain to achieve the maximum level of value to the customers and the firms involved in this chain (Bourlakis et al., 2012). Therefore, PRs affect the best-value SCs significantly since they disturb the balance between speed, quality, cost, and flexibility and decrease the value within the SC. Contrarily, the literature on SCs suggests that PRs can add value to all entities in the SCs. PRs carry intangible benefits, such as product usage information, product defect statistics, and returned product conditions. Therefore, SC members need to devote more effort to finding value in the returned products (Dapiran & Kam, 2017). Further, understanding the PRs can provide SC firms with a competitive advantage and help to decide the corrective actions in manufacturing or marketing activities (Stock & Mulki, 2009).

Also, circular economy (CE) is a concept that contributes to reducing waste and optimizing the usage of resources, as well as extending sustainability through SCs. The CE concept has increased in importance over the years (Mishra et al., 2018), and the transition towards this
model is predicated on business models with reverse cycles (Batista et al., 2018). According to Sehnem et al. (2019), CE aims to replace traditional production methods by adopting a closed-loop strategy to reduce waste. When compared with the linear economy, CE also produces and distributes products but avoids having them disposed of at the end of their lifecycle and tries to reuse, repair, remanufacture, or recycle them. Products in CE are designed and manufactured to meet these requirements to contribute to sustainability (Frei et al., 2020). CE design is based on three levels: product, organization, and industry. At the product level, the focus is on the features of the product that allow life expansion and restoration, such as modularity, repairability, upgradability, and recyclability features. At the organization level, restoration steps such as reusing, repairing, reconditioning, refurbishing, remanufacturing, and recycling are taking place. Lastly, at the industry level, firms focus on the restoration of used materials and using renewable resources, as well as making use of waste and by-products (Batista et al., 2018).

Significant support for creating a CE comes from legislators and lawmakers towards a sustainable future, where they apply specific environmental legislation for different industries. Applied laws set guidelines for waste management and natural resource (water and energy) protection during the manufacturing of products (electronics, chemicals) or extractions of ores (petrol, mining industry) for environmental reasons (Huang, 2009). Furthermore, besides adopting a CE, firms can take further sustainable measures and actions, such as reducing their carbon footprint and water consumption, increasing local water recycling, capturing and reusing excess heat, corporate with fair-trade suppliers, avoiding or recycling plastics at every stage of production and distribution, and eliminating using toxins (Frei et al., 2020).

2.2 Product Returns

PRs are a critical phenomenon since they are associated with uncertainties related to price, demand, cost, and product quality. The literature on PRs can be traced back to the 60s and 70s when literature discussed warranties and money-back guarantees (Duong et al., 2022). The current literature provided various definitions for this context. PRs were defined as “Processes associated with returning or receiving returned products for any reason. These processes extend into post-delivery customer support” (Rogers et al., 2002). Also, PRs defined by Ambilkar et al. (2022) as “A reverse flow in the traditional supply chain and are categorized as the activity of returning goods back through the supply chain with a focus on retailers.” Unfortunately, firms evaluate PRs from a business perspective. Tian and Sarkis (2021) claimed that firms
consider PRs as a result of poor customer service and marketing. Further, they argued that firms
do not focus on developing proper strategies for PRs and pay even less attention to
environmental issues resulting from RL. Nonetheless, the types of PRs were one of the major
discussions of the current literature on PRs, and they were linked to different sources.

The research of Shaharudin et al. (2015) presented three types of PRs (Figure 2). They divided
the returned products within the SC into (i) Manufacturing returns generated internally by the
manufacturer for rework or scrap or because of misspecification, and partial shipments. (ii)
Distribution returns are related to returns between businesses (B2B), such returns happening
due to damage, end-of-shelf, or containment products. (iii) Customer returns are generated
from consumers and flow back into the SC to manufacturers. Those returns include EOU, EOL,
repair, damage, and warranties. Further, the researchers argued that manufacturing returns
generally originate from internal return sources, whilst distribution and customer returns come
from external sources. Moreover, the research clarifies that the returns from external sources
are the most complicated and create complexity along the RSC. Similarly, Rogers et al. (2002)
discussed the types of PRs. They divided the returned product, according to the Global Supply
Chain Forum, into five categories: (i) Consumer returns comprise the largest category of
returns. They are generated for various reasons, such as customer remorse, defects, and lenient
return policies. (ii) Marketing returns generated by slow sales, inventory repositioning, and
quality from the downstream position in the SC. Another cause of these returns is that retailers
do not want to keep the stock any longer, competition, job-outs, surplus, and overruns. (iii)
Asset returns include the assets returned by the firm’s management to recapture and reposition,
such as oil drilling equipment and reusable containers. (iv) Product recalls are normally
initiated because of safety or quality issues that concern the lives or health of consumers. Firms
recall their products voluntarily or due to government regulations. (v) Environmental returns
include the disposal of hazardous materials. Those returns are mostly initiated by
environmental regulations set by governments.
Figure 2. Classification of PRs


Another stream of literature considered PRs from a different perspective. Shear et al. (2006) segregated the PRs into controllable and uncontrollable returns. *Controllable returns* result from problems, difficulties or errors of the seller or customer and can be eliminated by developing strategies and programs by the company or its SC members. *Uncontrollable returns* are inevitable and cannot be removed by the company in the short term. The research of Krikke et al. (2013) distinguished between the commercial and warranty returns in the early life cycle and EOU and EOL returns in the later life cycle. They argued that early returns normally go back again to the original markets. EOU returns include all returns that are no longer useful to the original owner but for which new customers can be found in secondary markets at lower prices.

Ferguson et al. (2006) discussed another perspective of PRs types. They argued that PRs are consumer returns of products to the retailer within 30-90 days and product overstocks returned to the manufacturer by the retailer. They debated that consumer returns are unpredictable and can happen at any time during the product life cycle, driven by the "customer is king" attitude. Furthermore, they clarified that product overstocks are not related to consumer PRs since overstocks include products that are not sold to customers and returned to the original source at the end of the product life cycle.

### 2.2.1 Product Returns Management

Managing PRs has become the most crucial activity for firms since the number and volume of products flowing back through the SC are increasing (Stock & Mulki, 2009). Thus, the
management of PRs as part of SCM presented a substantial discussion point in the current literature. PRs management was defined as “Part of supply chain management that includes returns, reverse logistics, gatekeeping, and avoidance” (Rogers et al., 2002). It is seen as the front end of RL and focuses on the timing, quantity, and quality of returned products (Guide Jr & Van Wassenhove, 2006). The main activities of PRs management in companies include return authorization, RL, gatekeeping, avoidance, product recovery, disposition and processing, and crediting (Mollenkopf et al., 2011). Although RL is a result of PRs, some literature considered the PRs as a part of RL that includes other activities such as recycling, refurbishing, repair, and waste disposal (Stock & Mulki, 2009).

Shear et al. (2006) argued that effective PRs management could create multiple benefits for firms since it significantly reduces costs by enhancing operational efficiencies, developing better disposition strategies for salables, and achieving higher recovery rates for unsalables. Further, it reduces the problems with the firm's clients, so the customer will be more satisfied, and the firm's profits will increase. The PRs process includes several stages. According to Min et al. (2006), PRs entail the collection of returned products at specific distribution centres or retail outlets, the consolidation of returned products, the asset recovery of returned products through repairs, refurbishing, and remanufacturing, and the disposal of returned products with no commercial value. Thus, PRs management presents a main challenge for firms that need to be addressed.

2.2.2 Product Returns Policy

The PRs policy was a different leading research point in the current literature. Most of the literature studied the relationship between PRs and return policy (Foscht et al., 2013; Guide et al., 2006; Petersen & Kumar, 2009; Rogers & Tibben-Lembke, 2001). The PRs policy plays a protuberant role in increasing or decreasing the PRs volume and frequency. Usually, firms adopt lenient returns policies as a way of assuring quality, lowering the customer's risks, and increasing customer purchases. However, many firms employ restrictive return policies because of the high cost of RL and the low salvage value of the returned products, and consequently, they get lower sales numbers (Gäthke et al., 2022; Seo et al., 2016). Researchers argued that many firms use more flexible return policies to gain customer retention and increase sales in new markets (Rogers & Tibben-Lembke, 2001). Therefore, the company’s PRs policy must be designed to balance customer satisfaction and company costs at strategic levels (Toyin, 2022). Rogers and Tibben-Lembke (1999) emphasize that the adoption of a liberal return policy
by one player in the market will create difficulties for other market players to tighten their PRs policies. Also, the liberal return policies of manufacturers became a return abuse policy since the manufacturers take the whole risk during the entire product life cycle.

Another corpus of studies focused on return policies from the standpoint of the manufacturer-retailer interaction. Generally, manufacturers adopt return policies that are much stricter than retailers (Stock & Mulki, 2009). Moreover, manufacturers rely on retailers’ market experiences and use return policies as a tool to encourage retailers to buy and stock their products at large. These policies strengthen the retailer's market position and give them the possibility to return the unsold products completely or partially (Emmons & Gilbert, 1998; Padmanabhan & Png, 1997). Further, Yan and Cao (2017) studied the return policy between manufacturers and e-retailers. The authors emphasize the importance of sharing the PRs’ information to improve the SC performance. Finally, Janakiraman et al. (2016) divided return policy leniency into five types; time, money, effort, scope, and exchange leniency, which affect the return and purchase decision. Hence, they argued that factors that influence returns are scope, time, and exchange leniency rather than money and effort leniency.

### 2.2.3 Drivers of Product Returns

Most of the literature has taken a holistic view of PRs’ drivers. The literature discussed, for example, the drivers of PRs in B2C (Lee, 2015; Powers & Jack, 2013), or they studied the drivers of PRs in specific organizations, such as computer manufacturers (see Guide et al., 2005; Potdar & Rogers, 2012). Nevertheless, the literature often describes the reasons for PRs in general terms without providing clear details on the nature of the drivers behind these returns. In the research of Sven et al. (2007), the authors presented the drivers of PRs in thirteen various industry sectors in Flanders, including FMCG. Those reasons are product damage in transport; the product does not meet customer expectations; delivery error; product showing a quality defect; cancellation of sale by the customer; the customer does not state a specific reason; the product being delivered too late; stock adjustments (overstock or unsold stock); and returns after use. In the B2B environment, retailers return the products to the original supplier for many reasons. The research of Daugherty et al. (2001) argued that dissatisfaction, defective merchandise, incorrect items received, repairs needed, damaged or unsold units, reconditioning, recycling, and product recall were the common reasons for the retailer's returns. Also, Rogers and Tibben-Lembke (1999) explained that SC partners (B2B) return products due to over-ordered marketing promotions, low sales of the product, EOL products, the end of the
selling season, and product damage in transit. Further, the authors developed standardized return driver codes that are: (i) Repair drivers include returns to the factory for repair, service or maintenance, agent order error, ordered wrong material, order entry error, shipping wrong materials, incomplete shipment, wrong quantity, duplicate shipment, duplicate customer order, not ordered, and missing part. (ii) Damaged drivers include damaged (cosmetic), dead on arrival, and defective products. (iii) Contractual drivers include stock excess, stock adjustment, and outdated products.

The research of Yuliawati and Brilliana (2022) linked the PRs to the product itself, the return policy, the customer experience and psychological, the changes in perception, and the price. The product reason relates to the product's low quality, defects in the product, difficulty to install, and performance not matching the needs of the user, while the return policy reason relates to leniency or restrictions on return policies. The experience reason relates to a positive previous return experience or past or recent purchase experience, and the price reason connects to find a better price. Potdar and Rogers (2012) mentioned specific causes for PRs in the electronics industry. They argued that the key reasons for PRs are defective products, damaged products delivered, returns without any reason, the product not including desired features, the customer not liking how the product operates, and products not worth the price. Toyin (2022) stated that customers return products for a variety of reasons, such as defects, unwanted products, out-of-warranty, recalls, regret for purchase, lack of knowledge to operationalize the product, purchase of a greater quantity than necessary, and lack of quality in the purchased product. Krikke et al. (2013) studied the drivers, volumes, and values of different returns along the life cycle within different companies. They found that the primary drivers of commercial and warranty returns are defectiveness, customer dissatisfaction, the wrong product shipped, and the customer's inability to handle the product. Also, they argued that EOU and EOL returns are driven by compliance and economic viability.

Other scholars have taken a distinct approach to identifying the drivers of PRs, focusing on fundamental drivers rather than the typical reasons for returns. For example, Srivastava and Srivastava (2006) related PRs to global competition, profitability, customer expectations, and SC performance. Further, they stipulated economic, regulatory, and customer pressure as the three main drivers for PRs. Also, Shaharudin et al. (2015) considered environmental regulations, global competition, short product lifecycles, and friendly return policies as reasons for the higher volume of PRs. Thus, legislation and market forces are behind the reason why firms manage returns voluntarily. Likewise, the research of M. de Brito and R. Dekker (2003)
discussed the PRs within the SC between the three main actors and distinguished returns between manufacturers, distributors, and customers. Also, they have attributed reasons for PRs in B2B to product recalls, unsold products, wrong or damaged deliveries, functional returns, and stock adjustment. Consequently, four main drivers for PRs in B2B can be established from the current literature. These are (i) **quality**, (ii) **contractual agreements**, (iii) **customer service**, and (iv) **legislation**.

(i) **Quality** of the supplied products can play a crucial role in returning the products to their original suppliers. In a B2B context, low-quality products create a high volume of PRs. In their research, Mollenkopf et al. (2011) argued that retailers are hugely affected by their supplier’s product quality. Generally, poor-quality products will generate immoderate return situations for retailers and create operational and profitability concerns. Likewise, poor packaging quality can stimulate transit damage or product degradation when in storage or on the retail shelf. These quality problems create difficulties for the retailer to sell those products and reduce their sales and profits. Also, Bernon and Cullen (2007) confirmed that the main driver of PRs is faulty products, even though there are plenty of internal drivers that create PRs. Similarly, Lee (2015) explained that most customers return their purchased products due to product performance. Also, their study revealed that most of the returns identified by manufacturers were due to the reason “Product did not work as expected”.

(ii) **Contractual agreements** governing returns between suppliers and retailers can be another driver for PRs. The exploratory analysis of Breen (2006) considered the return policy as an agreement by members in a SC (e.g., manufacturers, distributors, and retailers) in which they accept excess products from a downstream channel member. Also, the contracts determine return policies, customer rights, and corporation obligations. Frei et al. (2022) clarified that retailers return the products to the manufacturer because of delivery too late, incorrect product delivered, delivered in a damaged state, substitute unacceptable (grocery items), lost during transport, a replacement was sent and original then found, and description inaccurate. Further, M. P. de Brito and R. Dekker (2003) argued that the main drivers of PRs are the commercial agreements between the supplier and retailer, the internal returns within the company, maintenance returns (spare parts returns), and return of equipment after lease. Moreover, PRs policy as a type of SC contract gives the retailers the right to return the unsold goods to the manufacturers and get the credit for that amount (Wang, 2002).
Customer services that aim to enhance the relationship between B2B partners can create PRs within the SC. In many cases, businesses return the product for no apparent reason (Krikke et al., 2013). Further, the manufacturer offers the retailer a specific amount of returns as credit and 2%-5% of the annual sales as damage compensation and accepts the unsold products to prevent the loss of goodwill (Ruiz-Benitez & Muriel, 2014). Also, the retailers take advantage of good relationships with suppliers and return the products as a way to reduce their inventory (Jayaraman & Luo, 2007). Therefore, proper PRs processing can result in higher customer service levels as the returned products are credited to customers shortly and accurately (Stock & Mulki, 2009). Customer satisfaction is the objective of customer service. It means the fulfilment of customer needs. The PRs’ experience can influence customers’ perceptions of the service they receive. Hence, providing high customer service pushes firms to accept returned products (Toyin, 2022). Moreover, when returns are treated as an asset, it can permit the firms to grow customer loyalty, increase profits, and enhance their corporate image (Frei et al., 2022). Therefore, manufacturers are effectively designing vendor-friendly return policies to increase retailer loyalty (Stock & Mulki, 2009).

Legislation, such as environmental and governmental regulations, can play a notable role in creating PRs between businesses. The European Union (EU) law stipulates, for example, that customers can return products within 14 days for any reason (Walsh et al., 2016). Further, the legislation mandates manufacturers or brand owners to manage their products at the EOL stage (Krikke et al., 2013). Many authors argued that legislation, such as the EU legislation on waste electrical and electronic equipment (WEEE), directs the manufacturer to take back and dispose of the EOL products in an environmentally friendly manner (Bernon & Cullen, 2007; Breen, 2006; Guide & Van Wassenhove, 2001; Hung Lau & Wang, 2009). Also, Shaharudin et al. (2015) emphasized the role of environmental legislation in creating PRs. Likewise, the research of Mutha and Pokharel (2009) considered legislation, social responsibility, corporate image, environmental concern, economic benefits, and customer awareness as major drivers for PRs. Also, Hung Lau and Wang's (2009) research argued that PRs are driven by environmental legislation, extended producer responsibility, economics, and improved customer service. Thus, government regulations can lead to more PRs. Moreover, regulations give the customer the power to return the products. Therefore, customers feel regulations like a safeguard for them in risky situations whenever they are dealing with other businesses (Gäthke et al., 2022).
2.3 Reverse Logistics in Supply Chains

RL in the SCs have gained special consideration from academia and businesses and evolved into a leading issue for many organizations' improvement. This importance is gained mainly from the increased regulatory pressure, such as producer responsibility, consumer expectations and societal sustainability demands, as well as the possibility of acquiring value from the returned products. Moreover, environmental consciousness and legal and economic forces have brought more attention to RL (de Brito & Dekker, 2003). RL includes all aspects of managing, reducing, processing, and disposing of hazardous or non-hazardous waste and processes of reverse distribution (Govindan & Bouzon, 2018). Therefore, RL can bring multiple benefits to companies. Daugherty et al. (2001) argued that effective RL helps firms have better customer service, improved customer satisfaction, increased control of inventory, reduced costs, higher profitability, and enhancement of the corporate image. Therefore, the activities of RL became more valuable in all industries and business sectors (Sven et al., 2007).

RL has been defined in different ways and modified over time. Also, the definition has been adjusted to include more activities. In the early nineties, the Council of Logistics Management (CLM) published the first known definition of RL. “The term often used to refer to the role of logistics in recycling, waste disposal, and management of hazardous materials; a broader perspective includes all relating to logistics activities carried out in source reduction, recycling, substitution, reuse of materials and disposal.” (M. de Brito & R. Dekker, 2003). Later, the CLM redefined RL as “A process of planning, implementing and controlling raw materials, in process inventory and finished goods inventory from the point of consumption to the point of origin.” (Potdar & Rogers, 2012). Further, in the B2B context, RL was defined as “A process in which a manufacturer systematically accepts previously shipped products or parts from the point for consumption for possible recycling, remanufacturing, or disposal.” (Dowlatshahi, 2000).

The reverse logistics entail specific activities. Those activities are distinct if the reserve flow comes from end-users or SC partners and whether those returns are products or packaging material. Product RL activities are; PRs to the supplier, reselling, selling via outlet, salvaging, reconditioning, refurbishing, remanufacturing, reclaiming materials, recycling, and the landfill (Rogers & Tibben-Lembke, 1999). Later, the same authors (Rogers & Tibben-Lembke, 2001) updated the RL activities into remanufacturing, refurbishing, recycling, landfill, repackaging, returns processing, and salvage. Also, they explained the critical role of RL for specific
industries with high PRs value and rate. Further, RL activities consist of collection, inspection-sorting, product refurbishing, product cannibalization, partial disposal, recycling, remanufacturing, repair/reuse, and redistribution (Murat Selim & Yasemin, 2016). Breen (2006) argued that the RL concept was used by academia to cover different kinds of activities, such as individual customer defective PRs, product recalls, product warranties, product recycling or reclaiming, secondary sales, and equipment return for re-use. Ravi and Shankar (2015) explained that different functions could be performed throughout the RL activities, including gatekeeping, compacting disposition cycle times, remanufacturing and refurbishment, asset recovery, negotiation, outsourcing, finance management, and customer service. Daugherty et al. (2001) argued that the RL activities in the retail sector include handling recalls, exchanges, returns of damaged products, re-distributions of seasonal and excess inventories, trade-ins, the disposal of shipping containers, and the collection of products for recycling. In the mail order business, RL activities are shipping back, returning, reconditioning, refurbishing, recycling products and packaging, reusing, disposing, remanufacturing, and changing the merchandise (Foscht et al., 2013).

2.3.1 Drivers of Reverse Logistics in Supply Chain

Drivers of RL in the SC have been discussed in the research of RL and are related to several factors. These factors are either 

external, such as public awareness, legislation, and the support of SC partners, or 

internal, such as the importance of RL relative to other issues, company policies, strategic planning, top management commitment, resistance to change, information and technological systems, financial resources, personnel resources, performance metrics, and quality of returned products (Hung Lau & Wang, 2009). Wilson and Goffnett (2022) claimed that the implementation of RL in firms is driven by; economic implications, regulatory requirements, corporate social responsibility (CSR), and consumer expectations. Other bodies of research provided specific drivers for RL, including economics, legislation, and corporate citizenship. Researchers argued that firms adopt RL either because they can gain profit from it, or they must, or they are motivated to do it socially (Akdoğan & Coşkun, 2012; de Brito & Dekker, 2003).

As such, drivers of RL in the SC are concerned with (i) economic drivers, which are related to an effective RL program that holds many gains for the firms. It can reduce the use of raw materials and disposal costs. Also, it helps firms obtain valuable spare parts and creates financial opportunities in second-hand markets. Moreover, firms are using RL to achieve their
marketing goals and minimize competition (Akdoğan & Coşkun, 2012; Wilson & Goffnett, 2022); (ii) *legislation drivers* that refer to jurisdictions indicating that a company should recover its products or accept them back. For example, in many countries, customers legally have the right to return the products. Also, the environmental legislation increased the producer's take-back responsibility (M. de Brito & R. Dekker, 2003); (iii) *corporate citizenship drivers* refer to the set principles that a firm holds to implement RL activities. In this case, firms are trying to create an image of an environmentally responsible organization in the market (Akdoğan & Coşkun, 2012).

Most of the scholarly works concurred with the drivers discussed earlier. However, researchers have also introduced additional drivers based on their perspectives. Jayaraman and Luo (2007) argued that the key drivers for RL are *financial and non-financial*. Firms handle RL to benefit from financial opportunities, such as recoverable manufacturing systems. The non-financial drivers of RL include competitive pressure, environmental regulations, and corporate citizenship. Chan et al. (2012), while examining RL in the automotive industry, identified unavoidable returns, environmental and green concerns, enforced legislation, economics, and corporate citizenship as general drivers for RL. Likewise, Murat Selim and Yasemin (2016) decided on key drivers for RL as economic, environmental, and corporate responsibility, and they added marketing, legal, operational, and asset protection drivers. Moreover, Rahman and Subramanian (2012) investigated the drivers of RL, and they found that legislation, volume and quantity, customer demand, environmental concerns, incentives, resources, and integration and coordination are the main drivers for it.

### 2.3.2 Barriers to Reverse Logistics in Supply Chains

Barriers to RL in SC have their foundation within the firms; for example, Rogers and Tibben-Lembke (1999) discussed the main barriers to implementing effective RL in organizations. The barriers are the importance of RL relative to other issues, such as; *company policies, lack of systems, competitive issues, management inattention, financial resources, personnel resources, and legal issues*. Govindan and Bouzon (2018) provided plenty of barriers to implementing RL within the firms and SC. They classify it into a governmental perspective and a customer perspective. They decided the following barriers: technology and infrastructure (i.e., lack of technical skills), governance and SC process (i.e., difficulties with SC members), economic-related issues (i.e., lack of initial capital), knowledge-related issues (i.e., lack of knowledge on RL practices), policy-related issues (i.e., lack of specific laws), market and competitors-related
issues (i.e., little recognition of competitive advantage), and management related issues (i.e., low importance of RL relative to other issues).

2.3.3 The Product Returns and Reverse Logistics Relationship

PRs and RL are deeply linked concepts within SC literature. They are almost identical, especially since they have common drivers for occurrence. Most of the literature used the two concepts interchangeably (see Bernon and Cullen (2004) and Bernon and Cullen (2007)) while discussing the PRs phenomenon. The authors used the same reasons to describe the drivers for RL and PRs. A superior understanding of PRs and the efficient management of RL is the secret recipe for the organization's success. Moreover, implementing appropriate RL will reduce the cost of returns and increase the company's revenue.

Reverse logistics is related to handling returned products resulting from different reasons, such as production defects, product recalls, commercial returns, warranties, and wrong deliveries. Hence, more businesses are directing the logistics for PRs professionally since the RL cost (4-9.49% of the total logistics cost) could reduce the profit. Thus, the proper application of product recovery could generate extra value (Chan et al., 2012). Also, Rogers and Tibben-Lembke (2001) argued that decent RL practices could increase the company's competitiveness by reducing the customers' risk when purchasing a product since the customers know that the product can be returned easily. Further, appropriate estimation of returns is a prerequisite for creating an effective and efficient RL network (Srivastava & Srivastava, 2006). PRs and RL encompass substantial hidden costs, i.e., recovery costs that affect the firm's revenues. Hence, if the management controlled the processes of RL properly, recovery costs could be minimized and potentially lost revenue could be recovered (Potdar & Rogers, 2012). Likewise, since PRs are driven by customers, environmental impacts, regulations, and profitability, many firms have implemented RL programs to collect EOL products for remanufacturing or recycling. Thus, the relationship between PRs and RL is so deep (Duong et al., 2022).

Product returns, on the other hand, became a fact of life for manufacturers and all SC players, besides environmental concerns. Therefore, all businesses realized using effective RL systems to gain competitive advantages (Jayaraman & Luo, 2007). According to Stock and Mulki (2009), proper practices in PRs and RL can be a “win-win” situation, providing benefits to customers and companies. Therefore, the effective handling of the PRs process, including RL, assists firms in increasing customer loyalty and improving product sales. Finally, Shear et al.
(2006) argued that effective PRs and RL operations could be utilized as a competitive weapon against other companies that serve the same customers.

### 2.4 Summary of Literature Review

The literature review on SCM of the FMCG chains and their PRs value reveals a diverse range of sources and perspectives. This diversity highlights the importance of examining the relationship between PRs and RL literature in the context of SCM value. The review identifies drivers and barriers as key factors that have implications for companies and their SC strategies in achieving PRs and RL objectives. Notably, there is a research gap in understanding the drivers specific to PRs in the FMCG sector. It is crucial for firms to emphasize the significance of PRs within the SC by incorporating them into their policies and management practices. The model presented in Figure 3 illustrates the main topics addressed in this literature review and how these issues are interconnected. It is important to note that some of the arrows in the model are represented as dashes, indicating uncertainty or ambiguity in the relationship between concepts. Examples were provided within the literature review to explore the connections between drivers, barriers, and strategies.

*Figure 3. The supply chain management of FMCGs*

*Source: Dachan and Sherif (2023)*
3 Methodology

3.1 Research Philosophy

Perceptions of reality have historically varied across temporal and situational contexts. Given the inherent diversity of human nature, individuals may hold divergent beliefs regarding truth, knowledge, and the nature of reality. Consequently, the methodologies employed to investigate phenomena are contingent upon the philosophical assumptions of the researcher.

Research philosophy is a fundamental aspect of the research process that implicitly or explicitly guides the selection of research methods and the interpretation of findings. It encompasses the researcher’s ontological, epistemological, and methodological assumptions that inform their approaches to knowledge acquisition and data analysis. By critically examining these assumptions, researchers can enhance the rigour and reflexivity of their work (Bell et al., 2019).

Ontology pertains to the formulation of theoretical frameworks that explicate the nature of reality. It comprises the assumptions that researchers hold regarding the existence and essence of phenomena. These ontological assumptions shape the researcher’s objectives and inform their approach to knowledge acquisition (Bell et al., 2019). According to Easterby-Smith et al. (2015), ontology can be broadly classified into four distinct positions: realism, internal realism, relativism, and nominalism. In the context of this thesis, which aims to investigate the drivers of PRs within existing SCs, a relativist ontology was chosen. Our selected position is predicated on the notion that reality is socially constructed and that individuals within the FMCG sector possess divergent perceptions of reality. By adopting a relativist ontology, we seek to gain a nuanced understanding of the PRs phenomenon and generate insights that are grounded in the lived experiences of individuals and observers.

Epistemology refers to the evolution of the theoretical frameworks that elucidate the nature of knowledge and how it can be acquired. It is inextricably to ontology, with a given ontological position informing the researcher’s epistemological stance. Epistemology provides researchers with a framework for addressing questions related to the conduct of research and the acquisition of knowledge (Bell et al., 2019). The epistemological position adopted in this thesis is that of constructionism. Our stance posits that reality is socially created and that knowledge is derived from the interpretation of diverse perspectives and experiences. Thus, adopting constructionist epistemology will help us acknowledge the socially constructed nature of knowledge and the existence of multiple divergent perspectives and interpretations of reality.
3.2 Research Design

Research design can be comprehended as the blueprint for the systematic collection and analysis of data to generate evidence that adheres to established quality standards (Bell et al., 2019). For this thesis, we developed a research design at the outset of the project to outline and justify the data collection methods and sources. Additionally, we determined the approach for data analysis and how it would address the research questions (Easterby-Smith et al., 2015). Basically, there are five major research designs: longitudinal, case study, cross-sectional, experimental, and comparative (Bell et al., 2019). Accordingly, the adopted design of this thesis is a case study due to the exploratory nature of the research. Yin (2018) defined a case study as “an empirical method that investigates a contemporary phenomenon (the “case”) in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (p.50). The rationale behind choosing the case study as our research strategy is that our thesis aspires to construct a theoretical framework pertaining to the drivers of PRs between businesses operating within the Swedish FMCG sector. Also, a case study design perfectly matches the qualitative nature of our thesis and achieves its objective (Bell et al., 2019). Further, the case study method permits us to focus in-depth on a specific case and preserve a holistic and real-world perspective on the PRs phenomenon as our unit of analysis. Therefore, the significance of using the case study design in this thesis has emerged mainly because we need to deeply understand one market for the complex phenomena of PRs and RL in the Swedish context. Likewise, we choose the case study approach as it allows us to work with various forms of evidence, including documents, artifacts, interviews, and participant observation (Cooper & Schindler, 2003; Yin, 2018). This approach helped us collect and analyse data from multiple sources and gain a comprehensive understanding of the research topic, which can serve as an example for other markets with similar conditions.

3.3 Research Method

The research method refers to the systematic procedures researchers employ to collect and analyse data related to their research inquiry. These procedures include various tools, such as questionnaires, interviews, focus groups, or participant observation, through which researchers gather information by listening to and observing others (Bell et al., 2019). Commonly, researchers adopt either: qualitative, quantitative, or mixed methods, each with its unique research strategies and corresponding epistemological and ontological perspectives (Bell et al., 2019). Despite the growing usage of qualitative research for its potential to provide in-depth
comprehension, it is often perceived as inferior to quantitative data collection. This perception is largely attributed to the utilization of non-probability sampling, relatively smaller sample sizes, and the inability to generalize the results to a broader population (Cooper & Schindler, 2003). However, in our research, we employed a qualitative method to collect rich and detailed data that provides insights into the experiences and perspectives of the participants. As authors, we played a significant role in gathering and interpreting the data, with theory emerging from the evidence gathered along the way. Our strategy involved conducting semi-structured interviews and participant observation in one selected company. The motivation for using a qualitative method was to study the PRs phenomenon through the eyes of the people under study and to probe beneath outside appearances (Bell et al., 2019). Additionally, the data collected for this thesis is non-numeric in nature and was based on participants’ statements and actions (Easterby-Smith et al., 2015). As such, it was essential for us to employ a qualitative method as the primary strategy in this thesis.

3.4 Research Approach

The process of linking theory to research is dependent highly on the research approach, which can be understood as a mean of deliberate scientific reasoning (Spens & Kovács, 2006). Research can be conducted using three main logical reasoning approaches: induction, deduction, and abduction (Easterby-Smith et al., 2015; Spens & Kovács, 2006). Inductive is an approach to the connection between theory and research in which the theory is the conclusion of the research. Conversely, deductive is an approach to the correlation between theory and research in which the latter is performed with reference to hypotheses and ideas deduced from the former. Abductive reasoning usually begins with observations of phenomena and then pursues the development of explanations for them, often by working iteratively between theory and data (Bell et al., 2019).

Our goal in this thesis is to contribute to the existing body of knowledge on PRs, and we believe that the inductive approach is particularly well-suited for this type of research. We aim to identify the drivers of PRs, which necessitates gathering insights from the field. As such, the inductive approach enables us to generate a theory as an outcome. In other words, the inductive approach serves the purpose of this thesis by allowing us to begin impartially and with minimal preconceived theories, thereby enabling the theory to emerge from the data (Karen, 2009).
3.5 Data Collection

Collecting data is a crucial component of any research study (Bell et al., 2019), and as such, this qualitative study employs a broad scope of data collection. We aim in our thesis to achieve data type triangulation (Easterby-Smith et al., 2015; Mills et al., 2010) by collecting and synthesizing data from multiple sources on the nature of PRs and their impact on SCs. This approach helps us minimize bias and enhance the reliability and validity of our thesis. Figure 4 provides information about the types of data utilized in our thesis.

Figure 4. The data triangulation

Source: Dachan and Sherif (2023)

The current thesis is informed by secondary data from existing literature in the SCM field, which is supported by primary data gained from interviews with experts from Sweden’s FMCG sector and one researcher’s observations. One of the authors has been a ‘participant-as-observer’ in an FMCG company, which provided us with the necessary insight to understand PRs in a B2B environment. Initially, we decided on the country, prospective companies, and specific positions within firms that may best suit our research. We did not use one typical method to reach participants, but we used several platforms and techniques, such as word of mouth, online searches, and references. First, we found possible participants on “LinkedIn” and contacted them through the “Sales Navigator” function. Secondly, we visited manufacturers, distributors, and retailers’ offices to reach targeted participants. Also, we sent
e-mails to the firms’ HR departments to ask for possible interviewees. Lastly, we requested that every participant recommends us their colleagues or managers from other firms in their business domain who meet our requirements. In our invitation letter, we shared our names, school, program, area, and scope of the study, the ethical considerations we observed, the interview structure, and the expected duration. According to the participants’ replies, we agreed on a day and time for the interview, or we shared further information, such as the aim of this study and the interview questions. To better understand the respondents' experience related to PRs, our thesis utilized a set of interview questions centred around main topics. Figure 5 depicts the primary concepts discussed during the interviews, while Appendix 1 provides the complete list of interview questions utilized.

Figure 5. Main concepts discussed during the interviews.

Source: Dachan and Sherif (2023)

3.5.1 Primary Data

Primary data refers to original data that researchers collect for specific purposes. In our study, the acquisition of this data assumes a pivotal role, given that it is specifically collected to address our research questions. To this end, we made a concerted effort to reach out to as many potential interviewees as possible to obtain the most comprehensive insights from practitioners in the relevant sector. In terms of the sample, we employed purposive sampling, which involves
the researcher identifying the sample unit and selecting specific members for inclusion (Easterby-Smith et al., 2015). We aim to interview experienced participants from both the supplier and retailer sides of the B2B supply chain to gain a comprehensive understanding of their perspectives on PRs and how they impact their businesses. Notably, our interviewees are affiliated with some of the most renowned and significant players in the Swedish FMCG sector. During our outreach, we contacted 62 potential respondents from 26 Swedish companies and ultimately conducted eight interviews. Based on the relevance of the information obtained from the interviewees, seven interviews were deemed useful for the purpose of this thesis. Table 1 presents additional information regarding the interviews conducted.

<table>
<thead>
<tr>
<th>Interview No</th>
<th>Interviewee Code</th>
<th>Company Type</th>
<th>Type of product</th>
<th>Respondent's Role</th>
<th>Experience</th>
<th>Interview Method</th>
<th>Interview Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P1</td>
<td>Producer</td>
<td>Food, Bakery and Confectionery</td>
<td>Customer Service Team Leader</td>
<td>25 Years</td>
<td>Online</td>
<td>60 Minutes</td>
</tr>
<tr>
<td>2</td>
<td>P2</td>
<td>Retailer</td>
<td>Food, Diary and Ambient Drinks</td>
<td>Global Chief Logistics Officer</td>
<td>19 Years</td>
<td>Online</td>
<td>33 Minutes</td>
</tr>
<tr>
<td>3</td>
<td>P3</td>
<td>Producer</td>
<td>Dairy, Ambient Drinks and Nutritional Products</td>
<td>Logistics and Customer Collaboration Manager</td>
<td>17 Years</td>
<td>In Person</td>
<td>30 Minutes</td>
</tr>
<tr>
<td>4</td>
<td>P4</td>
<td>Producer</td>
<td>Dairy, Ambient Drinks and Nutritional Products</td>
<td>Logistics and Customer Collaboration Specialist</td>
<td>8 Years</td>
<td>In Person</td>
<td>35 Minutes</td>
</tr>
<tr>
<td>5</td>
<td>P5</td>
<td>Retailer</td>
<td>Grocery Store</td>
<td>Branch Manager</td>
<td>20 Years</td>
<td>In Person</td>
<td>45 Minutes</td>
</tr>
<tr>
<td>6</td>
<td>P6</td>
<td>Supplier</td>
<td>Food and Beverage</td>
<td>Customer Service Group Manager</td>
<td>5 Years</td>
<td>E-mail</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>P7</td>
<td>Retailer</td>
<td>Grocery Store</td>
<td>Regional CEO</td>
<td>15 Years</td>
<td>In Person</td>
<td>55 Minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total 258 Minutes</td>
</tr>
</tbody>
</table>

Table 1. Interviews details

3.5.1.1 In-depth Interviews

Bell et al. (2019) defined in-depth interviews as a quantitative research technique that contains semi-structured and unstructured interview styles, which we employed in our thesis. In a semi-structured interview, the interviewer has a predetermined set of open-ended questions that can be supplemented with follow-up questions to elicit insightful responses from the interviewee, unlike an unstructured interview, which provides a list of topics and issues to be covered, known as an interview guide. This style of questioning is typically more informal, and the wording and order of the questions vary between interviews.

In addition to the reasons cited by Bell et al. (2019), the nature of our research questions and the importance of establishing personal connections, as discussed by Saunders et al. (2012), were other factors that led us to choose in-depth interviews as our research method. One notable
advantage of using this method in our thesis was the ability to gather comprehensive and
detailed information from interviewees on various aspects connected to PRs and RL. Through
in-depth interviews, we were able to compile meaningful information from multiple companies
and managers with diverse backgrounds and experiences. Open-ended questions were
employed, which allowed the interviewees to provide broader answers, and we focused the
interviews on our research framework with follow-up questions as needed.

Further, we accommodated the preferences of the interviewees by conducting the interviews in
person, online, or via email, based on their convenience. We were diligent in contacting the
participants whenever more information was required. All interviews were conducted in
English, which is a common language among the participants and us. The interviews lasted
approximately 30–45 minutes, although some interviews lasted up to 60 minutes. Before each
interview, we sought the interviewee's consent and utilized online tools to conduct, record, and
transcribe the interviews. We also respected the confidentiality of the participants' organizations by avoiding questions that could elicit classified company data and allowing the respondents to skip questions if necessary.

3.5.1.2 Participant Observations

One researcher of this thesis has taken notes and collected data through personal observations
during a ten-week contract with a major manufacturer of fresh dairy products and beverages in
Sweden. The primary objective of these observations was to gain an understanding of the
company’s PRs process and gather data to answer our research questions. The researcher
worked full-time in Company A’s logistics and customer collaboration department for the
Nordics and Baltic (NORBAL) region, allowing for personal interaction with various teams
within the company in Sweden and virtual interaction with teams in other areas within
NORBAL region. During this time, the researcher had access to non-public company
information and participated in day-to-day work activities, providing the opportunity to
observe different aspects of the company, extract data, and take detailed field notes. This access
also provided greater insight into the phenomenon of PRs and their drivers and how they disturb
existing B2B supply chains. Appendix 2 provides further details about company A, while Table 2 provides information about the collected data through observations.
3.5.2 Secondary Data

Secondary data was primarily obtained from literature sources such as books, academic journals, and magazine articles to provide a solid background for our research and to identify theories and methods upon which our research could rely. It was also used to complement our primary data (Easterby-Smith et al., 2015). However, obtaining secondary data was not without its challenges. As noted in the introduction to this thesis, the literature on PRs is sparse (Petersen & Kumar, 2009). Furthermore, most of the literature on PRs falls into one of three categories: operations management of PRs (including the design of manufacturing networks, product recovery, reverse distribution, and quality), retailer and manufacturer issues (including return policies, channels, inventory, pricing, and information strategies), and customer experience, psychology, and perception of the marketing-operation relationship (Duong et al., 2022). As a result, we made additional efforts to locate literature that would serve the purpose and objectives of our thesis. To ensure the rigour of our study, we focused primarily on peer-reviewed journals, with a particular emphasis on the number of citations in academic databases. We collected papers from large databases such as Scopus, WoS, ProQuest, and Google Scholar using keywords based on the main topics of our thesis (e.g., “product returns,” “reverse logistics,” “business* returns,” and “commercial returns”) in the title, abstract, and keywords fields. These keywords were linked using Boolean operators (AND/OR). For example, we used the combination “product returns” AND “drivers” OR “reasons” to increase the number of

<table>
<thead>
<tr>
<th>Data related to</th>
<th>Areas of observation</th>
<th>Department</th>
<th>Number of contacted employees</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
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<td>SCM</td>
<td>Orders process</td>
<td>Customer collaboration</td>
<td>4</td>
<td>1 weeks</td>
</tr>
<tr>
<td></td>
<td>Supply planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demand planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logistics</td>
<td>Forward logistics</td>
<td>Logistics</td>
<td>3</td>
<td>2 weeks</td>
</tr>
<tr>
<td></td>
<td>RL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Third party logistics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product returns</td>
<td>Reasons for returns</td>
<td>Customer collaboration</td>
<td>10</td>
<td>6 weeks</td>
</tr>
<tr>
<td></td>
<td>Disturbances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Process of returns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers claims</td>
<td>Customers complaints</td>
<td>Customer collaboration</td>
<td>10</td>
<td>1 week</td>
</tr>
<tr>
<td></td>
<td>Customer service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Returns policies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>27</strong></td>
<td><strong>10 weeks</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Participant observations details
results and reduce limitations in our keyword search. Additionally, we focused primarily on supply chain-, business-, operation-, and logistics-related articles listed in the Academic Journal Guide by Chartered ABS.

### 3.6 Data Analysis

Data analysis is a challenging task in research, and our experience was no exception. Managing and transforming large volumes of data from interviews and observations into meaningful insights is complex and time intensive. The conduct of in-depth interviews added to the complexity of the analysis, as unstructured responses required a thorough examination.

Mills et al. (2010) argued that thematic analysis is an effective method for examining data and generating meaningful knowledge and understanding. Braun and Clarke (2006) defined thematic analysis as a technique for identifying, analysing, and reporting patterns (themes) within data. They explain that the theme is a significant aspect of the data that relates to the research question and represents a pattern within the dataset. The theme can be derived from repetition, indigenous typologies, metaphors and analogies, transitions, similarities and differences, linguistic connectors, social scientific concepts, and missing data (Bell et al., 2019). Given this, we chose to use thematic analysis to explore the drivers of PRs within businesses.

In our thesis, we adopted the six phases of thematic analysis outlined by Braun and Clarke (2006). Initially, we transcribed the data gained from interviews and observations and individually reviewed them to establish familiarity and generate initial codes. Subsequently, we collectively examined them and identified potential themes, considering their recurrence. We iteratively reviewed and refined the themes to identify the most significant ones that could address the research questions. Finally, the most relevant themes were identified as the final themes. The analysis process is illustrated in Figure 6.
3.7 Research Quality

The literature on research quality encompasses a variety of perspectives. Bell et al. (2019) asserted that the principal criteria for assessing research are reliability, replicability, and validity. Further, Easterby-Smith et al. (2015) posited that research quality is predicated on a spectrum of factors, such as expert knowledge, topic worthiness, rigour, sincerity, credibility, resonance, contribution, ethics, meaningful coherence, and transferability. Similarly, Saunders et al. (2012) suggested that the central considerations for quality research design are credibility, transferability, dependability, and confirmability.

To ensure the trustworthiness and rigour of our research, it is crucial to emphasize its relevance, credibility, and salience to the broader research community (Easterby-Smith et al., 2015). Transparency and reflexivity were also essential in our methodological approach and significantly enhanced our research findings. We recognized that the collection of primary data directly impacts outcomes, so it was imperative to ensure the participation of relevant and knowledgeable participants to advance our research aim.

One practical approach to achieving robust and reliable data is to conduct in-depth interviews with an adequate number of professionals who possess relevant expertise in the research domain. Further, we opted for a novel and intriguing topic, which has garnered a favourable
response from the relevant community. We utilized widely accepted and reliable methods in our research design, interview structure, and questioning protocols to elicit valid responses. We sourced our data from trustworthy and rigorous sources, and, notably, one of our researchers had first-hand exposure to the operations under scrutiny via a 10-week internship. Our data was internally consistent and enabled us to discern patterns in our area of investigation.

According to Lincoln and Guba (1985), qualitative research should meet specific criteria, including credibility, dependability, confirmability, and transferability. Meeting these criteria ensures that the research is trustworthy and of high quality (Easterby-Smith et al., 2015; Lincoln and Guba, 1985).

Credibility refers to confidence that the findings are accurate and believable. Our thesis maintained constant communication with the case companies and interviewed participants to ensure the credibility of our findings. Data were also collected from multiple sources, such as interviews and company reports.

Dependability refers to the consistency of findings in other contexts. To ensure dependability, this study provided a detailed description of the methods used and an audit trail of the data-collection process. The theoretical content was clearly stated and sourced, and detailed information about the research design and sample strategy was provided.

Transferability refers to the degree to which findings can be generalized or transferred to other contexts. This study provides a detailed description of the research context and uses purposive sampling techniques to increase transferability. However, the generalizability of the results is limited due to the nature of the selected sector.

Confirmability refers to the objectivity of data collection and analysis. This research process and steps were documented in detail to minimize potential biases. Two researchers conducted this study, ensuring congruence between them regarding the accuracy and relevance of the data (Bell et al., 2019). Triangulation techniques have also been applied to increase confirmability.

Further, to ensure the quality of the thesis, our thesis was mainly concerned with presenting meaningful and credible results, as Lincoln & Guba (1985) suggested for research. We aligned our research methods to the research problem and findings, using well-established methods based on the theoretical background. We also followed data collection protocols to maintain credibility throughout our study. We conducted in-depth interviews ethically and respectfully, giving respondents the freedom and privacy to express themselves. Moreover, we used multiple
sources of primary and secondary data, to collect, analyse, and verify our data. We also created a matrix to record the details of respondents, their reservations, and reports for authenticity. Our aim was to produce sensible findings that contributed to the study.

In conclusion, this discussion presents various criteria used to assess the quality of this thesis, including those introduced by Lincoln and Guba (1985) and those discussed by Easterby-Smith et al. (2015). By meeting these criteria through various methods such as maintaining constant communication with participants, using multiple sources of data, providing detailed descriptions of methods used, using an interview guide, critically assessing sources used in the literature review, etc., this study ensures its trustworthiness and quality.

3.8 Ethics

Easterby-Smith et al. (2015) enumerated ten fundamental principles that are imperative to protect the interests of research subjects and informants, as well as the integrity of the research community. To maintain ethical considerations, we meticulously adhered to these guidelines and confirmed that all the essential subjects were addressed in our research.

As researchers in the business field, we recognize the importance of upholding ethical principles in our research practices. To ensure the trustworthiness and credibility of our study, we followed Bell et al.'s (2019) four main ethical principles that are expected of business researchers. These principles relate to the avoidance of harm, obtaining informed consent, protecting privacy through confidentiality, and preventing deception.

To ensure avoidance of harm, we took measures to protect participants from physical or psychological harm, ensuring that they were free to withdraw from the study at any time.

Additionally, we provided participants with information outlining the purpose and procedures of the study and obtained their informed consent to record the interviews.

To protect privacy through confidentiality, we maintained anonymity and ensured that all data collected could not be traced back to individual participants. We also ensured that any personal information provided by participants was kept confidential.

Finally, to prevent deception, we provided participants with accurate information about the study and did not use any misleading or false information. Overall, we believe that following these ethical principles was essential to ensuring the validity and reliability of our research.
findings while also protecting the rights and dignity of the research participants. Figure 7 presents the ethical principles adhered to in this thesis.

Figure 7. Ethical principles adhered to in the thesis.

Source: Dachan and Sherif (2023), adapted from Bell et al. (2019).

3.9 Summary

To provide a concise overview of the methodology chapter, it can be stated that this thesis adopts a constructionist epistemological position and a relativistic ontological stance and employs an inductive approach. The research used a qualitative case study strategy to construct a theoretical framework pertaining to the drivers of PRs between businesses in the Swedish FMCG sector. The researchers collected data through two primary streams: semi-structured interviews and participant observation. Additionally, this thesis draws heavily upon extant academic literature related to PRs. The researchers employed a thematic analysis method to analyse the large volume of empirical data collected. This analysis yielded insights into the primary drivers of PRs between businesses in the Swedish FMCG sector, which are detailed further in Chapter Four. Throughout the conduct of this research, the researchers adhered to established ethical protocols for academic research.
4 Empirical Findings

This thesis explores the factors that drive PRs among businesses in Sweden’s FMCG supply chains and the impact of PRs and RL on those chains. Through a thematic analysis of qualitative interviews and researcher observations, this study has identified specific reasons for PRs that are grouped into four principal drivers. These drivers stimulate RL activities in the Swedish FMCG sector and provide valuable insights into the dynamics of PRs in this industry. Drivers are namely: quality, contractual, customer service, and legislation. Further, these drivers are responsible for the disturbances in FMCG supply chains.

4.1 Driver of Product Returns in Sweden’s FMCG Sector

4.1.1 Quality

In the context of the studied sector, the relationship between suppliers and their customers hinges significantly on product quality, encompassing diverse aspects such as packaging, damage, breakage, taste, odour, and expiration date. The inability of products to meet the requirements and expectations of customers has been found to be a key determinant of PRs and RL. Empirical evidence supports the assertion that product quality constitutes the primary factor driving PRs. In unanimous agreement, all respondents affirmed quality as the foremost rationale for PRs, thereby prompting suppliers to accept returns of substandard products from retailers. The definition of low quality is somewhat subjective and varies among Swedish businesses, but commonly cited concerns include factors of damaged products, storage conditions, sensory attributes, and shelf-life and expiration dates.

Damaged products are considered one of the main concerns about the product’s quality among the respondents. Those damaged products create returns between businesses in the FMCG supply chains. Often, products get damaged during transportation or delivery between suppliers and retailers. P6 explained this fact, "Damages during transportation constitute a prevalent cause of PRs. Such incidents may occur when heavy items are inappropriately placed atop weight-sensitive goods, resulting in crushing or deformation. Additionally, inadequate securing of goods during transportation may result in items falling and breaking. Companies can implement measures to prevent such occurrences by ensuring proper organization and securing goods during transportation." The same perception was provided by P1. "The main reason for PRs is damaged during transportation. Damages occur also during loading or unloading the goods or when the driver is not careful and puts the pallet too hard, where it
breaks in some cases. Also, they damage the goods with a forklift by driving into the pallet. The other issues are about securing the goods and water damage during transport." Moreover, P1 remarked that "Fragile items such as eggs and dense liquids are prone to damage during transportation and handling, resulting in spillage. Consequently, even minor damages may necessitate the return of the entire shipment." Similarly, P2 explained his perspective on the damaged product during transportation and its role in creating PRs within the B2B supply chain. "Damage can occur for a variety of reasons, such as a truck braking or turning too quickly, an improperly secured load, or a forklift hitting one of the lower boxes of a multi-pack. In the event that a pallet is damaged, we begin a dialogue with the supplier to determine the appropriate course of action."

Also, P3, who works for a dairy manufacturer, mentioned that damaged products that have been torn or have deformed packaging are one of the main reasons behind returns. "PRs appear due to various reasons. Products with packaging or leaking problems that happened during transportation or handling will be returned to us from our clients."

Likewise, P5 contributed to this point by mentioning, "In many cases, we get deliveries that are damaged during transportation. In such cases, the supplier must assume his responsibility and accept the return of these products."

**Storing conditions:** the findings of this study indicate that inadequate storage conditions lead to a decline in product quality and subsequently, creates PRs. Many interviewees highlighted the importance of proper storage conditions, especially for temperature-sensitive products like food. P4 mentioned, "Our products are so sensitive to storing conditions. Some PRs happened if the products were not stored at the right temperature." Insight from P5 was also similar, "Some meats, such as chicken and fish, show great sensitivity to the method of storage, so poor storage often leads to its return to the supplier. The proper storage of goods at a certain temperature contributes mainly to reducing waste and therefore to returning them to their suppliers." Alike, P7 described the effect of product temperature on PRs. "Every shop has a manager who has a responsibility to check the goods if they are broken, too hot, or too cold when they arrive. And if we see something is wrong, we return it directly." Also, P6 confirmed the role of storing temperature during storage and transportation as a reason for PRs. "PRs can be reduced through temperature control during storage and transportation. However, this may not always be possible. Our company implements this practice, but if there is an issue with the supplied product later, our company may invoice the customer for any discrepancies." Finally,
during the internship, the researcher observed that all deliveries that reached the retailers or wholesalers without considering the storage temperature during transportation would be returned to Company A since they did not match the quality standards required by clients.

**Sensory attributes** such as taste, texture, and odour are fundamental aspects that significantly affect customer satisfaction with a product. Consequently, products that exhibit unfavourable sensory characteristics are prone to be returned by dissatisfied SC members, thus contributing to PRs. As described by P2, products exhibiting unpleasant sensory characteristics are deemed defective and are frequently returned to the supplier. “In the event that multiple of our customers express concerns about a particular product, such as an unusual smell, taste, or appearance upon opening the package, and it was not visible to us upon receiving, we’ll inspect it and the remaining stock for quality. Unacceptable products will be returned to the supplier.” Correspondingly, P7 mentioned, “Sometimes the meat has a bad smell or texture, and we see the product has been damaged. We see that this meat has strange things. For sure, we will not open it, and we will return it. Also, the fruits we can see with our own eyes are damaged; we can’t sell them, and the customer will not buy them. That’s why we return them.”

Also, P6 explained the role of freshness as a reason for PRs. “Receipt of substandard or spoiled goods, such as tough meat or moldy vegetables, constitutes another factor contributing to PRs. Customers return products if the quality does not meet their expectations.”

Moreover, during the researcher's internship, it was observed that Company A had experienced previous PRs due to the unpalatable taste of certain ambient drinks. Consequently, the company returned a significant number of delivered batches to their factory.

**Shelf-life and expiration dates** are crucial aspects of product quality that impact PRs in FMCG supply chains. These terms refer to the maximum period for which a product can be stored under optimal conditions while retaining its quality, safety, and efficacy for human use, consumption, or sale. The expiration date is the final day that the product is deemed safe for use, while the shelf-life refers to the period during which the product maintains its freshness, nutritional value, and sensory attributes. PRs occur if the shelf-life or expiration date has been exceeded, resulting in the deterioration of the product's quality or safety. P1 referred to expiry date as a cause for PRs. “As manufacturers, we are responsible for our products reaching their expiration date. If any retailer contacts our sales representatives with a claim, we accept the return and compensate the store.” Likewise, P5 expressed, “Manufacturers bear the responsibility of removing expired products from store shelves and providing compensation to
the retailer for the returned items.” P7 also noted, “Damaged products and those nearing their expiration date are the primary causes of PRs. This indicates that companies may need to adopt more rigorous quality control measures to ensure that their products have an adequate shelf-life remaining upon reaching their customers.” Concerning the shelf-life reason, P3 explained that his company is obliged to return products that have less than 66% of their shelf-life. “If we take Sweden as an example, our customer’s agreement states that we have to return the delivered products that have less than 66% of their shelf-life on our customer's shelves.” Similarly, P7 elaborated on shelf-life-related returns. “The agreements between companies dictate the supervision and provision of products. For instance, bread producers are required to retrieve their products before they reach four days prior to their expiration date.” Lastly, P6 confirmed that the shelf-life period is a significant reason for the PRs. “Another factor contributing to PRs is the discrepancy between the guaranteed and actual "best before’ date of an item.”

4.1.2 Contractual

The establishment of contractual arrangements between SC members is a crucial aspect of PRs and often triggers the implementation of RL processes. Our empirical research has shown that wrong deliveries, wrong quantities (over or under-delivery), and untimely deliveries are the primary factors that constitute the contractual driver of PRs.

Wrong deliveries occur when incorrect goods are delivered to customers. In a business setting, the provision of the wrong products violates the contractual agreement, thereby making the supplier liable for the PRs. P1 confirmed that their company is returning products claimed as wrong ones by their customers. “If a customer reports an issue with a pallet label that differs from the product in the cases and provides evidence, the pallet will be returned. This is because it represents a production problem.” Also, according to P2, efforts are being made to utilize the wrong deliveries received from suppliers. However, in certain instances, such deliveries are returned due to their inability to meet the intended purpose. “Sometimes we receive items that we did not order. This can happen when we buy large quantities from wholesalers. If their warehouse management is not professional, they might accidentally send us the wrong items. In these cases, we try to be practical. If it’s a food item that we can sell, we’ll try to make a deal with the supplier. But if it’s something that we can’t sell, we’ll have to arrange for it to be returned.” P3 expounded upon the contractual arrangements with retailers, which engender PRs considering nonconformities with the agreed-upon products. “One of the reasons behind
PRs is that the customer orders a specific product, but due to problems within the SC, a different product is delivered. Hence, our agreements with our clients require us to return any supplied products that deviate from the agreed-upon ones.” Likewise, P4 affirmed that customers are returning products that were either not ordered or inadvertently sent to them. “In situations where a product is delivered to a customer by mistake, perhaps due to an error in the ordering or delivery process, the customer is not required to accept or keep the product. In such cases, the customer may choose to return the product to us.” Also, she remarked that “it is possible that contracts could be a reason for PRs if they include clauses allowing retailers to refuse certain items. For example, if there is a product that the retailer does not sell, they will request the supplier to collect it.”

Similarly, P5 confirmed that incorrect deliveries are returned to suppliers. “Incorrect deliveries do indeed lead to returns, such as when goods are supplied but not agreed upon. In such cases, we can contact the supplier and ask them to send their truck for retrieval.” They also mentioned, “Retailers call the supplier and inform them that we have received the wrong goods. The supplier may either come to retrieve the goods or ask us to destroy them.” Likewise, P6 concurred that incorrect deliveries establish a significant factor in PRs and the subsequent generation of RL. "Several underlying causes contribute to PRs. For instance, retailers may inadvertently order an incorrect item or quantity. Additionally, errors in the picking process at warehouses may result in the delivery of the wrong product, such as when a customer orders frozen pan steak but receives frozen meat. Mislabeled goods may also lead to returns if the customer label is affixed to an incorrect item, resulting in delivery to the wrong customer. In such scenarios, companies attempt to rectify the issue by facilitating logistics between customers.” Analogously, P7 recounted personal experiences with the role of incorrect deliveries in creating PRs. “Sometimes the suppliers send us expired materials by mistake, so we have to send them back.” They also mentioned, “The big problem we are facing is that suppliers are sending wrong products that we didn’t order.”

Wrong quantities denote a discrepancy between the number of products requested in a retailer’s purchase order and the quantity supplied by the vendor, resulting in either an overabundance or shortfall of the requested items. Thus, it generates PRs between the businesses. P3 explained that wrong-delivered quantities create returns. “It is possible that we have delivered a quantity that differs from the amount ordered, resulting in a subsequent return.” Similarly, P5 expressed that suppliers are responsible for wrong quantities in delivery. “In some cases, suppliers send smaller or larger quantities of orders that we place with their
companies without a compelling reason, so they must return these products because they have made this mistake. Always when it is the fault of the supplier, they are responsible for returning these goods supplied by mistake."

Additionally, the researcher noted that PRs transpired at Company A when customers received an erroneous quantity of products, either excessive or insufficient. This occurs due to logistical errors in the delivery process.

**Untimely deliveries** refer to the provision of goods to customers at a time when they are unable to accept or process the delivery. In such instances, customers elected to return the delivery to the supplier immediately. P1 explained this case. “There are much more refusals from customers when the delivery arrives at the wrong time. So, there is an automatic return.” The same reason appeared from P6 during the interview, as he explained that reaching the customer receiving area after receiving time will result in PRs. “Delivery to an incorrect location or at an incorrect time by the driver constitutes another factor contributing to PRs. Such incidents may occur when the driver inadvertently offloads the delivery at the wrong destination or outside the specified delivery window.”

Furthermore, the researcher observed that Company A returned numerous orders due to customer's refusal to accept deliveries, primarily resulting from drivers' tardiness in arriving at the designated customer warehouses or receiving areas.

### 4.1.3 Customer Service

The initiation of PRs and associated RL within businesses in FMCG supply chains may be necessitated by the supplier’s desire to maintain high levels of customer service. In many instances, suppliers accept PRs to provide superior customer service to their clients and retain them as loyal customers. The analysis showed that the PRs related to customer service are mainly due to return policies, business relationships, and collaboration.

**Return policies** emerge as a primary concern for customers, a fact that pushes companies to engage with other SC participants. Hence, return policies as an integral component of contracts or agreements among businesses, significantly contribute to the incidence of PRs within the Swedish FMCG sector. P1 clarified that the agreed-upon return policy with their customers triggers the returns to their company. “Our company has a policy in place to accept returns of goods that arrive at our customers damaged. If the damage is minor, we simply credit the customer.” Also, P4 clarified that their company’s lenient return policy played a prominent
role in increasing their PRs and sales. “One potential benefit of PRs is the enhancement of a company’s reputation. Additionally, the effective handling of PRs may result in increased future sales as customers appreciate the level of service provided.” Besides, P5 elaborated that return policies enable businesses to facilitate PRs even long after the initial purchase, as evidenced by their contracts with suppliers, which stipulate a long-term warranty allowing for returns in the event of defects during the storage period. “Our contracts with suppliers require them to provide us with a long-term warranty to return the product long after a period of supply in the event of a defect during the storage period.”

P6 revealed intriguing findings that their company's return policy is designed to deter fraudulent activities by customers, consequently leading to the incidence of physical PRs. “We sometimes accept returns to prevent customers from developing a habit of complaining about products to avoid paying for them. However, if this practice is not balanced with returns, customers may learn to exploit it by complaining about products even when there is nothing wrong with them to avoid paying.”

Lastly, P7 emphasized that their company prefers to work with suppliers who have flexible return policies and are willing to accept PRs. “For the bakery products, we have contracts, so suppliers need to return the excess and unsold products. The local supplier who wants to get in our store should offer to come and work with their products.”

**Business relationships** are essential for sustaining long-term contracts between suppliers and retailers. To maintain these relationships, manufacturers are often willing to accept PRs from SC members, such as retailers, without extensive deliberations. P1 elaborated, “When it comes to contracts, PRs aren't a big topic since the rules are clear. In the event of subpar goods upon receipt, the customer claims it back, and we either discard or take back the product based on its value.” P2 highlighted a similar perspective, stating that their suppliers deliver goods and accept PRs as a mean to strengthen the business relationship between the two entities. “Our company relies on suppliers for transportation to our warehouse in over 90% of cases since we do not possess our own vehicle fleet. This proves to be cost-efficient for suppliers as they can easily integrate the pickup and return of a small number of pallets into their existing routes.” Furthermore, P5 emphasized the significance of strong business relationships in facilitating PRs by stating: “We use our strong business relationships with these suppliers and pressure them to accept returns to ensure the continuity of business between us.”
Lastly, based on the researcher's observations, it was noted that Company A accepted several PRs from clients to foster and sustain business relationships. In certain instances, clients faced storage capacity constraints and requested that Company A retrieve the products until they were required later.

**Collaboration** between members of the SC also results in PRs. In certain cases, SC members return excess products to their suppliers as a form of collaboration. P2 corroborated this, stating that their organization accepts excess inventory from their business partners as a way of collaborating to alleviate the challenges that their partners face. “*Products that are received by our company are typically items that have remained in the wholesaler’s warehouse due to a lack of demand or inaccurate forecasting by food retailers. As a result, the wholesaler is left with excess stock that must be disposed of to prevent it from becoming waste. In such situations, our company serves as a partner to help mitigate this issue.*” Similarly, P4 revealed that his company returns the delivered goods to enhance the collaboration with their clients. “*For many cases, we can accept products to be returned to us to enhance our collaboration with our customers. It is not necessarily to increase the sales numbers or reduce the waste, but it can be to improve the logistics, for example.*”

### 4.1.4 Legislations

The legal frameworks and regulatory measures enforced within the markets that the firm operates within have a considerable impact on the generation of PRs. Naturally, firms are responsible for their products during their life cycle. The empirical findings revealed that the PRs between businesses are driven to a large extent by local legislation. The respondent considered laws, country regulations, and product recalls as reasons behind the legislation driver of PRs.

**Laws** play a conspicuous part in creating PRs in Swedish FMCG supply chains. P1 supported this point by confirming that their company is obliged to follow the country’s laws. "*Our company complies with all applicable laws and regulations regarding handling EOL products. In certain jurisdictions, governments have implemented regulations that mandate manufacturers take responsibility for the reconditioning or removal of their products at the end of their useful lives. Our company takes these obligations seriously, and we are committed to fulfilling our legal responsibilities in this regard.*"
Further, EU legislation, for example, directs companies to retrieve products at the EOL stage. As such, Swedish manufacturers, in their capacity as product owners, are obliged to return all supplied products that have reached their expiration date. P4 mentioned, "We need to return all the products that reached their expiry date as per EU law. Although it is small quantities in many cases, we need to tack them back to our warehouses." Further, he elaborated, "What is in the law, we are liable to do."

Swedish retailers are allowed to return products to their suppliers within a specific timeframe, in accordance with the law, giving them the chance to return items if their reasons are valid. P5 highlighted that their company relies on legal measures to return unaccepted deliveries. "According to the law, the product, such as meat and dairy, must have a sufficient shelf-life to be displayed in refrigerators or on shelves, and although the product may not be affected in terms of shape or taste after expiration, the supplier is obliged to return it from our company before the last day of the expiry date." He also mentioned, "In the event of a lack of quality or malfunction in the product, I, as a buyer, have the right, according to country law, to return these products."

Furthermore, the concept of producer responsibility influences the occurrence of PRs in the SCs. In some cases, retailers return products to the main supplier, who is responsible for them. According to P1, as a manufacturer, they have a legal obligation to manage their products until they reach their customers. "We deliver with the incoterm delivered at place (DAP), which means that we own the goods until they're in the customer's warehouse. So, if it arrives broken or damaged, it's still our goods."

**Country regulations** dictate the rules for conducting business within the country and the specifications of traded products. To comply with local regulations, suppliers are required to register their products in the market and ensure that the product labels contain all relevant information, such as the ingredients, in the local language. Failure to comply with these regulations results in the need for suppliers to return products that do not meet local standards. P3 mentioned, "Products that have no registration in the local markets or have a product description printed in language that differs from the Swedish must be returned to our warehouses." Thus, country regulations participate in creating PRs between businesses.

Furthermore, national regulations pertaining to food safety result in PRs. As elucidated by P2, food products that fail to comply with the standards set forth by the Hazard Analysis and Critical Control Points (HACCP) principle are subject to return. "The inbound quality
assurance process incorporates a system of checks and the implementation of HACCP to ensure that food products meet the requisite standards. If a product fails to meet these standards, it may be returned, or a dialogue may be initiated with the producer or supplier from whom it was purchased.” Additionally, the same interviewee confirms that the delivered products that have no information about containing allergic components will be returned to their supplier. “Due to quality and regulation considerations, all products must adhere to local health requirements. For instance, if a product’s table of ingredients fails to disclose the presence of an allergic ingredient such as peanut, the supplier may be required to relabel the product. In these cases, we opt to return the product rather than deal with the issue.” P7 also mentioned that country regulations require printing product labels and ingredients in Swedish. “We are getting alarms every week for small issues, it can be text in English instead of Swedish so we will block the code of this product in our system, and we will stop selling.”

Further, governmental inspections create PRs. P5 elaborated, “Country regulations play an important role in PRs. For example, the Department of Health often conducts inspection campaigns to ensure that the offered products comply with the health laws in force in Sweden.”

**Product recalls** are associated with concerns about the quality and safety of the supplied products and their potential harm to the end consumers. It is the process of returning defective or contaminated products from the markets to their original manufacturer for proper disposal. P1 shared his product recall experience, “We discovered harmful ingredients in our product which is dangerous to consume, and contaminated products were in almost every store in Europe and Sweden. We had to take everything back for destruction, and this was a huge product recall for us.”

Similarly, P2 recounted an instance of a product recall that occurred during their career and expounded upon how such recalls result in PRs between businesses. “There has been a case where one of the famous producers has requested that we cease selling a particular product due to concerns about the quality of a specific flavour of their product that had exceeded their acceptable standards for being on the market. As a result, they decided to recall the product from our company.”

Further, P3 mentioned that PRs happened when the product creates a risk to the life of the consumers. “PRs appear due to various reasons [...] one very unfortunate reason is when the product is contaminated.”
P5 also described product recall, “Sometimes we receive notifications about production errors, for example, the product containing allergens, so the producer asks us to stop displaying these products and return them using RL.”

P7 explained his product recall experience, “Although immediate removal of contaminated products from shelves may not be feasible, our customers purchase is prevented through a system block. Pending further directives, these products are typically returned to the supplier for disposal.”

4.2 Product Returns and FMCG Supply Chain Disturbances

In the Swedish FMCG industry, SC disturbances frequently arise from PRs processes between businesses. These disruptions manifest in various forms and have diverse underlying causes, rendering them complex and multifaceted issues to address. Empirical research findings have demonstrated that several distinct aspects of disturbances impact the SC. The ramifications of these disruptions can be far-reaching for businesses and their capacity to manage their SCs effectively. The empirical findings revealed various aspects of disturbances that affect SCs, including logistics, sustainability, operations, and cost and value.

4.2.1 Logistics Disturbances

The identification of a faulty or damaged product result in disturbances to the logistics team of the SC, as they are required to manage the return process of the affected products to the manufacturer. P2 emphasized that the PRs event required further efforts from the retailer to organize the return transportation. “When the transportation service is not affiliated with the supplying company, they will proceed to their next delivery. In such cases, our teams must contact the supplier to arrange for the pickup of the return or to find other solutions.” On certain occasions, firms must engage with other logistics firms that has not previously dealt with to enable the retrieval of particular products. P1 highlighted that their company is sometimes required to use the services of a different logistics provider to handle returns from a specific customer, which can result in disruptions and delays in the SC. “For the majority of our customers in Sweden, our company utilizes a single carrier to handle deliveries and returns. However, there is one exception to this arrangement. One particular customer has designated a specific carrier to exclusively handle the forward and RL. As such, we must coordinate with this transporter solely to manage PRs from this customer.”
Moreover, P3 noted that in unplanned PRs situations, the producer firm deviates from its standard transportation partner and seeks immediate solutions to expedite the return process. This underscores the potential impact of PRs on the logistics team of the SC, who must navigate unforeseen challenges and disruptions in a timely and efficient manner. “In critical situations where there is a quality issue that could potentially cause serious health problems, it is imperative to expedite the return of the materials to the warehouse. In such cases, we will not wait for our regular transporter to return the materials after a normal delivery. Instead, we will engage an alternative transportation company to ensure that the materials are returned to the warehouse as soon as possible for proper disposal.”

Further, RL, by its nature, often conflicts with forward logistics, leading to a shortage of available trucks or disagreements regarding destinations. This creates additional challenges for SC managers in terms of coordinating the timely and efficient return of products while still meeting their regular outbound delivery schedules. P4 explained, “Logistical delays in retrieving goods may arise due to limited truck availability for collection. Delivery trucks prioritize product delivery and may lack capacity for returns. Consequently, a separate route for returns collection is required, posing challenges for time-sensitive products with short shelf lives. Prompt pickup and return to the supplier is crucial.”

Additionally, the RL process for PRs from retailers requires SC partners to adhere to the same roles and practices utilized in forward logistics to maintain food safety standards. This necessitates the use of specialized techniques and transportation methods, potentially disrupting logistics processes. P6 provided insights into their firm's approach to handling the return of chilled products from a retailer, highlighting the importance of collaboration between SC partners to ensure product quality and safety. “Our company ensures the quality and safety of returned goods by picking up the items ourselves. This allows us to guarantee that the cold chain is maintained throughout the entire process.”

4.2.2 Sustainability Disturbances

RL for PRs can have a detrimental effect on the sustainability of SCs, particularly in terms of their impact on the environment. This is due to the additional transportation required, which often involves empty trucks travelling to collect small quantities of products, leading to unnecessary emissions and resource consumption. Hence, companies must consider the environmental impact of their RL operations and adopt measures to reduce their carbon footprint.
Based on the insights shared by P1, it is evident that the environmental impact of return transportation in the RL process is a significant concern. The process of RL involves additional transportation, which leads to increased greenhouse gas emissions, thereby potentially harming the environment. Therefore, companies must adopt environmentally conscious practices and take measures to minimize their carbon footprint while executing RL operations. “It is commendable that our company has implemented a strategy to minimize empty transport by coordinating with other carriers. By utilizing other carriers for returns transport instead of relying solely on our primary transporter, we have been able to reduce the number of empty trucks on the road and minimize the environmental impact of our transportation operations. This approach not only reduces our transportation costs but also demonstrates our company’s commitment to sustainability and environmental responsibility.”

Likewise, P2 mentioned, “Once a product has been delivered, even if it was delivered incorrectly, the transportation footprint has already been incurred. The product’s carbon footprint is generated during production, from sourcing raw materials and transporting them to the production site, packaging, and shipping the finished product. As such, a significant amount of carbon emissions is already embedded in the product apart from returning it.”

Further, P3 contended that PRs exert a substantial influence on firms’ carbon footprint. Therefore, companies must revise their approaches to managing PRs. “RL is a growing field that has gained increasing attention from companies in recent years due to its potential to contribute to sustainability goals. By collaborating with other companies to co-load deliveries and returns, firms can reduce their carbon footprint while also achieving financial benefits. This approach involves delivering a product for one company and picking up a return for another company.”

Additionally, P7 expressed that PRs have an impact on the environment and the sustainability of the SCs. “In our industry and other industries such as apparel, customers often make irresponsible purchases and return a large number of items. This has a negative impact on the environment since they may purchase multiple items, keep one, and return the others, which exhausts the SCs.”

4.2.3 Operations Disturbances

The process of handling the PRs creates operational interruptions within the firms that operate in the same SCs. P1 noted that returning a single product can disrupt the efforts of all SC
members and create operational difficulties for each one. “In the event of a product recall, our company requests that all stores that carry our products return them to their respective wholesalers. The wholesalers then collect the products from all stores and send them back to us for destruction. In such cases, we hold our raw material supplier accountable if the issue originated from their end. Ultimately, it is the supplier of the raw materials who is liable for any defects or issues with the product.” Also, P6 elaborated on the lengthy and complex PRs process and the operational disruptions it causes across various departments within the company. “Regarding the return process, the customer initiates a return by contacting customer service and expressing their desire to return an item. Customer service then generates a return slip to be printed at the relevant transport office. This return slip is subsequently distributed to the driver responsible for delivering goods to that customer. The return slip is included with the next delivery to the customer.”

Further, P2 highlighted that managing PRs is a time-consuming and costly process. “The primary concern associated with PRs is the required value-added work especially when it is excessively time-consuming and costly.” Also, it creates operational disturbances. “Although we have a pretty large warehouse and receiving area, the returned products may cause some disruption to the receiving team, particularly if the volume of returns is substantial.” P2 also indicated that the occurrence of PRs necessitates additional effort to assess the quality of the products, causing disruptions to the operational continuity of the firm by consuming human resources in investigating the quality of the available stocks. As a result, productivity among the workforce diminishes as their attention shifts to peripheral tasks that are not immediately connected to the forward SCs. “After the product is picked and shipped, the end consumer becomes an integral part of the value chain in providing feedback on any quality issues that may not have been visible during inbound inspection. Thus, receiving such complaints necessitates additional quality checks for certain items by our store teams.”

Likewise, P7 attested to the additional operational activities required by companies to identify and isolate defective items. “Recently, we had a case of eggs contaminated with salmonella. We checked every box of the delivered materials to find the affected patches, and it was a lot of extra work for us and created a big problem. And for sure, we will contact our central warehouse, and they will call or send mail to our supplier to get back their products.” Alike, P6 stated that PRs necessitate increased operational activities within companies to identify defective items, process the returns and disposing them. “The return process incurs additional operations, including processing returns, disposing of damaged goods, and associated costs
for the company. Therefore, we carefully evaluate the cost of each item in every return situation.”

4.2.4 Cost and Value Disturbances

PRs are combined with extra costs for the associated firms in the SC. These additional costs are mainly generated from handling the process or return transportation. P1 noted that PRs have significant cost implications for their company, particularly concerning transportation costs. “In cases where the value of the damage exceeds a specific amount, our policy is to accept a return of the damaged goods. It is due to the fact that the cost associated with returning the transport can be prohibitively high, making it more cost-effective for our customer to simply dispose of the damaged goods. Our policy is designed to ensure that our customers are fairly compensated for any damage that may occur during transit while also taking into account the financial implications of returning damaged goods.” Also, the cost concern was observed during interview 6. The participant mentioned, “Companies may implement routines to mitigate the costs associated with wrong deliveries. For example, instead of incurring the expense of an additional trip to retrieve a returned item, the company may opt to collect the item during the next scheduled delivery to the customer. This approach enables the company to avoid paying for an extra trip solely to retrieve a returned item.” P3 explained that PRs impact the costs of B2B supply chain members. “Returns generate additional costs for all parties involved, including handling and processing expenses. Contracts typically specify which party is responsible for bearing these costs in the event of claims or returns.” Also, P7 noted that PRs have a negative impact on their company’s profits and result in significant losses each year. He suggested that these funds could be better invested elsewhere. “Our company generates annual sales of hundreds of millions of Swedish Kronor, yet we discard products worth tens of millions. Despite our efforts to reduce returns, this remains a significant amount. These funds could be better utilized to benefit our customers and employees. As such, it is the responsibility of all members of our organization to minimize returns, particularly considering the current inflationary environment.”

Interestingly, the cost disruption also affects the third-party logistics providers who form an integral part of the SC and are involved in the transportation of goods across various locations. P1 mentioned, “In cases where our goods are transported in a curtain trailer and sustain water damage due to heavy rain, the transport company is liable for the damages. For example, if five pallets of our goods are being transported from one place to another and they arrive with
water damage, the transport company would be responsible for the value of the damaged and returned goods." The same finding was supported by P6 who confirmed that the transportation company is responsible for the cost of the damaged products during transportation. “In instances where goods are damaged during transportation, companies seek compensation from the transportation company responsible for the damage. For example, we invoice the transportation company for goods damaged during transit. However, the damaged goods are first returned to us before being sent back to the transportation company for processing.”

It is indisputable that FMCG products are time-sensitive and depreciate over time. P4 unequivocally stated that their products experience a significant loss in value upon reaching their expiration date. As a result, the company is compelled to provide compensation to retailers for this substantial diminution in value. “Customers would not return products that have a lower shelf-life. Instead, they would expect compensation for the product. This compensation is for the loss of sales or, however, it may be termed. In some cases, customers may request that the product be returned, but this is not common. Due to the reduced shelf-life of the product, it makes no sense to return it to the warehouse. Instead, it is better to give it to charity if it cannot be sold and compensate the customer.” Also, FMCG products are susceptible to damage during storage or transportation. As a result, SC members must consider the nature of the products during the return process to preserve their value. P6 explained that their products are sensitive to packaging and temperature to retain their value. If the product’s packaging is lost or its temperature is not properly maintained, the value of the returned goods is reduced or even lost entirely. “If a customer orders a lot of frozen food and wants to return it, our company checks the temperature of the returned item at the customer’s location to ensure that it has remained at or below -18 degrees Celsius. If the temperature is above this limit, it indicates that the cold chain has been broken, and the product cannot be resold.” Also, he remarked, “Our company faces challenges with returns when products are not returned in a salable condition. For example, when a customer orders too many French fries and opens the carton to store them in the freezer, the original packaging may not be returned with the product. In such cases, our company is unable to resell the product. This issue also arises with fresh products when the time taken to process returns causes the best before dates to expire before the product can be resold.”
5 Analysis

The overarching aim of this thesis is to conduct an in-depth analysis of PRs within FMCG supply chains in Sweden. Further, the study endeavours to discern the underlying reasons that drive PRs to suppliers operating in this sector while also exploring the potential relationship between PRs and SC disturbances.

Our findings have uncovered numerous reasons for PRs within businesses operating in the Swedish FMCG sector, which can be classified into four primary drivers. These drivers initiate RL processes and give rise to disturbances within the SC. The model presented below, derived from Figure 3, illustrates the prominent drivers of PRs identified in this study: quality, contractual, customer service, and legislation. Furthermore, the model demonstrates the disruptive impact of PRs on FMCG supply chains. Our study has revealed that PRs and the associated RL activities between businesses in Sweden create disturbances in logistics, sustainability, operations, and cost and value, disrupting the existing B2B supply chains. The developed model (Figure 8) did not consider some elements discussed earlier due to certain limitations related to the purpose of this study.

Figure 8. A model for PRs and disturbances in the Swedish FMCG sector

Source: Dachan and Sherif (2023)
5.1 The Drivers of Product Returns in the FMCG Supply Chains in Sweden

5.1.1 The Quality Driver

Based on the empirical findings, quality constitutes a pivotal factor in determining PRs and initiating RL within supplier-retailer FMCG supply chains in Sweden. This finding is consistent with existing literature that recognizes quality as a significant driver in PRs formation (Bernon & Cullen, 2007; Lee, 2015; Mollenkopf et al., 2011; Potdar & Rogers, 2012; Sven et al., 2007; Toyin, 2022; Yuliawati & Brilliana, 2022). However, it is noteworthy that our study has indicated the existence of specific factors related to the quality driver that is unique to B2B returns in Swedish FMCG supply chains and unexplained in the existing literature. Our results emphasize that the reasons for PRs relating to quality include damaged products, storing conditions, sensory attributes, and shelf-life and expiry dates.

5.1.1.1 Damaged Products

Our results reveal that damaged products during transportation or handling constitute a primary reason for B2B product returns in Swedish FMCG supply chains. For example, P1 mentioned:

“The main reason for PRs is damaged during transportation. Damages occur also during loading or unloading the goods.”

Our findings are consistent with the existing literature of (Daugherty et al., 2001; de Brito & Dekker, 2003; Potdar & Rogers, 2012; Rogers & Tibben-Lembke, 1999; Sven et al., 2007), which consider damaged products as a reason for PRs. The data indicates that the most common causes of product damage during transportation are attributed to improper handling, inadequate securing of goods during transportation, and careless driving attitude. Also, packaging damage led to returns, highlighting the impact of product damage on returns. Quotes mentioned by P2, P3, and P6 confirm this:

“Damage can occur for a variety of reasons, such as a truck braking or turning too quickly, an improperly secured load, or a forklift hitting one of the lower boxes of a multi-pack.” (P2)

“Products with packaging or leaking problems that happened during transportation or handling will be returned to us from our clients.” (P3)

”Damages during transportation constitute a prevalent cause of PRs. Such incidents may occur when heavy items are inappropriately placed atop weight-sensitive goods, resulting in
crushing or deformation. Additionally, inadequate securing of goods during transportation may result in items falling and breaking.” (P6)

Our findings underline the need for effective measures to prevent product damage during transportation and handling in Swedish FMCG supply chains, to reduce the incidence of PRs. Implementing proper organization and securing goods appropriately during transportation, appropriate driving behaviour, and careful handling of fragile items will help minimize the risk of product damage. Further, clear communication and collaboration between SC members to determine the appropriate course of action in the event of product damage help mitigate the impact of PRs on the SC.

5.1.1.2 Storing Conditions

Our observations present storing conditions as another reason for PRs in the concerned sector. Although previous research had studied the drivers of PRs within the FMCG sector (Bernon & Cullen, 2004; Sven et al., 2007), the authors did not discuss the storing condition. Our findings elucidate the significance of proper storage conditions, especially during transportation, in preserving the quality of temperature-sensitive products, particularly food products, and reducing PRs. The interviewees' views coalesced around the importance of maintaining appropriate storage temperatures to avoid quality degradation and resultant returns. Quotes from P4 and P6 demonstrate the role of storing conditions.

“Some PRs happened if the products were not stored at the right temperature.” (P4)

“PRs can be reduced through temperature control during storage and transportation.” (P6)

Our findings suggest that maintaining appropriate storage conditions is crucial for preserving product quality and reducing returns and waste. Therefore, companies need to undertake measures to guarantee that products are stored and transported at optimal temperatures, thereby preventing PRs and ensuring customer satisfaction. Failure to do so results in lost revenue and tarnishes the company's reputation.

5.1.1.3 Sensory Attributes

The results find that sensory attributes, such as taste, texture, and odour, are a new reason for PRs between firms in the studied sector. Findings from interviews and observations indicate that sensory attributes are fundamental aspects that significantly affect customers' satisfaction with a product. An example of the role of sensory attributes in triggering PRs is stated by P7:
“Sometimes the meat has a bad smell or texture, and we see the product has been damaged. [...] For sure, we will not open it, and we will return it.”

Products that exhibit unfavourable sensory characteristics are prone to be returned by retailers, thus contributing to PRs. Furthermore, our findings suggest that SC members must pay close attention to the sensory attributes of products to minimize returns and improve customer satisfaction.

### 5.1.1.4 Shelf-life and Expiry Dates

Our findings accentuate the significance of expiry dates and shelf-life of products as quality reasons for PRs in the Swedish FMCG supply chains. An example of this reason is the P1 statement:

“As manufacturers, we are responsible for our products reaching their expiration date. If any retailer contacts our sales representatives with a claim, we accept the return and compensate the store.”

However, it is pertinent to highlight that the role of the expiry date factor in the formation of returns has been addressed by only a limited number of studies (Krikke et al., 2013; Rogers & Tibben-Lembke, 1999) and to the best of our knowledge, there has been no research to date that specifically examines the role of shelf-life in PRs. Our findings confirm that effective management of shelf-life and expiration dates is critical for the appropriate performance of FMCG supply chains. Manufacturers need to ensure that their products are delivered to customers with adequate shelf-life remaining, which would minimize the likelihood of PRs.

Finally, our findings did not reveal any relationship with certain reasons for quality returns discussed in the current literature, such as product repairs needed and reconditioning (Daugherty et al., 2001; Rogers & Tibben-Lembke, 1999), installation difficulty (Yuliawati & Brilliana, 2022), and product features (Potdar & Rogers, 2012), and the quality reasons for PRs observed in the Swedish FMCG sector. While these quality reasons have been identified in previous research as reasons for PRs in different contexts, our study suggests that they do not play a role in PRs from retailers to suppliers.

### 5.1.2 The Contractual Driver

The findings indicate that contractual agreements between B2B supply chain members in Sweden are critical in shaping PRs. Our results align with and support the literature of Breen (2006), de Brito and Dekker (2003), and Wang (2002), which emphasized the significant role
of contractual agreements in driving PRs. This study identifies wrong deliveries, wrong quantities, and untimely deliveries as primary factors constituting the contractual drivers of PRs and triggering RL from retailers to suppliers.

5.1.2.1 Wrong Deliveries

Our respondents argue that wrong deliveries are a major cause for PRs to suppliers, which was almost universally agreed upon by the participants. Quotes expressed by P4 and P5, for example, confirm this:

“In situations where a product is delivered to a customer by mistake, perhaps due to an error in the ordering or delivery process, [...] In such cases, the customer may choose to return the product to us.” (P4)

“Incorrect deliveries do indeed lead to returns.” (P5)

Our finding is in line with the research conducted by Daugherty et al. (2001), Frei et al. (2022), Krikke et al. (2013), Sven et al. (2007), and Toyin (2022), who found that retailers return products to manufacturers due to wrong deliveries.

Further, the findings uncover multiple reasons for wrong deliveries, including errors in the ordering, picking, or labelling processes and issues with the logistics team. The quote from P6 demonstrates this point:

"Several underlying causes contribute to PRs. For instance, retailers may inadvertently order an incorrect item or quantity. Additionally, errors in the picking process at warehouses may result in the delivery of the wrong product [...] Mislabelled goods may also lead to returns if the customer label is affixed to an incorrect item, resulting in delivery to the wrong customer."

These findings correspond with the theory of Rogers and Tibben-Lembke (1999), who described wrong deliveries as a ‘repair driver’ for PRs. Wrong deliveries lead to a breach of the contractual agreement between the supplier and the retailers, making the supplier responsible for the product’s return and handling the RL.

Our results also highlight that the retailer’s response to wrong deliveries varies depending on the circumstances. Some retailers negotiate with the supplier to find a way to sell the items, while others return or destroy the products. A quote expressed by P2 exemplifies this:
“If it’s a food item that we can sell, we’ll try to make a deal with the supplier. But if it’s something that we can’t sell, we’ll have to arrange for it to be returned.”

5.1.2.2 Wrong Quantities

The existing literature depicts that wrong quantities in transactions between retailers and vendors lead to PRs (Anna Maria, 2015; de Brito & Dekker, 2003; Rogers & Tibben-Lembke, 1999; Sven et al., 2007; Toyin, 2022). Our findings are in line with the literature. Results indicate that incorrect quantities are caused by logistical errors, human errors, such as miscounting or mislabelling, or intentional actions, such as overstocking or understocking, to manage inventory levels. Also, if the supplier is at fault for the wrong quantities, they are responsible for the returns. The quote from P5 demonstrates this case:

“In some cases, suppliers send smaller or larger quantities of orders that we place with their companies without a compelling reason, so they must return these products because they have made this mistake.”

Our findings underline the importance of suppliers ensuring the accuracy of their deliveries to prevent returns. Additionally, it proves the crucial role of accuracy and efficiency in the SC process, from placing orders to delivery to avoiding PRs.

5.1.2.3 Untimely Deliveries

The findings of this study emphasize the importance of timely delivery in the FMCG sector and its impact on PRs. Delayed deliveries cause inconvenience for retailers and increase the likelihood of PRs. The quote from P1 exemplifies this:

“There are much more refusals from customers when the delivery arrives at the wrong time. So, there is an automatic return.”

Our findings are consistent with earlier research by Frei et al. (2022) and Sven et al. (2007) that identified untimely delivery as a cause of PRs. Our study also reveals that deliveries arriving at the wrong time or location and tardiness by drivers contribute significantly to PRs.

“Delivery to an incorrect location or at an incorrect time by the driver constitutes another factor contributing to PRs.” (P6)

Our findings suggest that retailers reject deliveries that arrive outside the designated time frames, leading to automatic returns. Therefore, addressing delivery timing and accuracy is crucial for reducing PRs and improving overall operations in the FMCG sector.
5.1.3 The Customer Service Driver

Drawing from our findings, it can be inferred that suppliers’ desire to provide high levels of customer service is a driver behind PRs and RL within the FMCG supply chains in Sweden. This finding is consistent with previous research by Krikke et al. (2013) and Sven et al. (2007), who found that suppliers often accept PRs without a specific reason, and with the findings of Frei et al. (2022), Stock and Mulki (2009), and Toyin (2022), who found that suppliers accept returns to strengthen their relationships with retailers and increase their loyalty. Our analysis emphasizes that the reasons for PRs relating to customer service include return policies, business relationships, and collaboration.

5.1.3.1 Return Policies

The existing literature indicated the role of return policies in driving PRs (Foscht et al., 2013; Guide et al., 2006; Petersen & Kumar, 2009; Shaharudin et al., 2015; Yuliawati & Brilliana, 2022). This study's findings corroborate the literature's insights into the impact of return policies on PRs in the Swedish FMCG sector. Our results reveal that companies adopt diverse return policies, ranging from accepting returns of damaged goods to providing long-term warranties for defects during the storage period. Quotes from P1 and P5 exemplify this.

“Our company has a policy in place to accept returns of goods that arrive at our customers damaged.” (P1)

“Our contracts with suppliers require them to provide us with a long-term warranty to return the product long after a period of supply in the event of a defect during the storage period.” (P5)

Notably, our study highlights how some suppliers' return policies are structured to deter fraudulent customer activities, while others offer flexible return policies and readily accept PRs to foster customer loyalty. Moreover, our findings suggest that effective handling of PRs increases future sales as customers appreciate high-quality service. Thus, this study confirms the critical role of return policies in shaping retailers’ behaviour, improving supplier reputation, and influencing the frequency of PRs in the FMCG sector.

5.1.3.2 Business Relationships

Our findings demonstrate the role of business relationships in the Swedish FMCG sector, with suppliers frequently accepting PRs to maintain these relationships with retailers. This finding is consistent with previous literature by Jayaraman and Luo (2007) and Ruiz-Benitez and
Muriel (2014), which have also identified maintaining business relationships as a reason for PRs.

Our observations indicate that suppliers receive PRs from clients as a way of fostering and sustaining business relationships. The importance of strong business relationships is clear when suppliers integrate the pickup and return of a small number of goods to maintain these relationships with retailers. Suppliers also accept returns to secure continuous business with their customers. A quote from P5 exemplifies this.

“We use our strong business relationships with these suppliers and pressure them to accept returns to ensure the continuity of business between us.”

5.1.3.3 Collaboration

Our findings indicate that collaboration between suppliers and retailers leads to PRs. According to our results, this collaborative approach is particularly evident when retailers return excess products, resulting from inaccurate forecasting to their suppliers to mitigate the challenges they are facing. The quote from P2 demonstrates this situation:

“Products that are received by our company are typically items that have remained in the wholesaler’s warehouse [...] As a result, the wholesaler is left with excess stock that must be disposed of to prevent it from becoming waste. In such situations, our company serves as a partner to help mitigate this issue.”

These findings support the arguments made by de Brito and Dekker (2003), Emmons and Gilbert (1998), Jayaraman and Luo (2007), Padmanabhan and Png (1997), and Ruiz-Benitez and Muriel (2014) about accepting excess stock as a way of collaborating between members of the SC. Furthermore, our findings confirm that some companies return delivered goods to achieve mutual benefits rather than focusing solely on their interests.

5.1.4 The Legislation Driver

The impact of legislation on PRs in the Swedish FMCG sector was a key finding of this research. Our results support the literature of Krikke et al. (2013), Mutha and Pokharel (2009), Shaharudin et al. (2015), and Srivastava and Srivastava (2006) in considering the legislation as a driver for PRs between firms. These conclusions confirm the importance of complying with relevant legislation in the management of PRs. Our results identify several legal reasons that drive PRs and RL, including laws, country regulations, and product recalls.
5.1.4.1 *Laws*

Our findings imply that PRs in the Swedish FMCG supply chains are influenced by law obligations. Suppliers are required legally to comply with Swedish and EU laws, particularly regarding environmental responsibilities at the EOL stage of their products. P4 describes:

“We need to return all the products that reached their expiry date as per the EU law. [...] what is in the law, we are liable to do.”

These revealed legal requirements are consistent with the reviewed literature of Bernon and Cullen (2007), Breen (2006), Guide and Van Wassenhove (2001), and Hung Lau and Wang (2009), who also discussed the role of EOL products in creating PRs. Additionally, retailers are supported by law to return products to their suppliers within a defined timeframe, as noted by Walsh et al. (2016). Our findings support this point and show the influence of customer protection law in the occurrence of PRs in the B2B context. Moreover, the extended producer responsibility is also a reason for creating PRs since manufacturers have legal obligations to manage their products during their life cycle. Our findings are consistent with the literature of Hung Lau and Wang (2009) and Mutha and Pokharel (2009), which also considered the producer’s responsibility in creating PRs.

5.1.4.2 *Country Regulations*

Our new findings suggest that complying with Swedish regulations is crucial for conducting business and avoiding PRs. Suppliers are required to register their products and ensure that their labels contain all relevant information, such as ingredients, in the Swedish language. Failure to comply with Swedish regulations results in the need for suppliers to return products that do not meet local standards. The quote from P3 demonstrates this:

“Products that have no registration in the local markets or have a product description printed in language that differs from the Swedish must be returned to our warehouses.”

Furthermore, our findings indicate that food safety regulations in Sweden play a pivotal role in generating PRs. Food products that do not meet the standards established by the HACCP principle are subject to return. Additionally, our results suggest that government inspection campaigns aimed at ensuring compliance with Swedish health laws also create PRs. Consequently, Swedish regulations contribute to the creation of PRs between businesses.
5.1.4.3 Product Recalls

Our findings show that product recalls have a role in creating PRs from the retailers to the suppliers in Sweden's FMCG sector. P2 illustrates this situation:

“There has been a case where one of the famous producers has requested that we cease selling a particular product […], they decided to recall the product from our company.”

These findings are consistent with the reviewed literature of de Brito & Dekker (2003), Rogers et al. (2002), and Toyin (2022), who considered product recalls as a reason for PRs. Our findings underscore that product recalls result from concerns about the quality and safety of products, including harmful ingredients, contamination, or production errors. P3 exemplifies this:

“PRs appear due to various reasons […] one very unfortunate reason is when the product is contaminated.”

In such cases, the manufacturer or supplier is responsible for retrieving defective or contaminated products from the market for proper disposal. This process involves the return of products from retailers to their source through RL.

5.2 The Impact of Product Returns on FMCG Supply Chains

5.2.1 Logistics Disturbances

According to our findings, disturbances in logistics stem from various reasons and have adverse effects on the FMCG supply chains; because products returned in SCs cannot be handled in the same way that products are managed in forward logistics (Bai & Sarkis, 2013). Our findings indicate that arranging the collection and transportation of PRs are typically perceived as the primary challenge. A quote from P4 exemplifies this challenge:

“Logistical delays in retrieving goods may arise due to limited truck availability for collection. Delivery trucks prioritize product delivery and may lack capacity for returns. Consequently, a separate route for returns collection is required, posing challenges for time-sensitive products with short shelf-lives. Prompt pickup and return to the supplier is crucial.”

Moreover, certain contracts or expectations imposed by partners prevent companies from utilizing efficient and effective distribution and RL operations. A quote from P1 confirms this:
“One particular customer has designated a specific carrier to exclusively handle the forward and RL. As such, we must coordinate with this transporter solely to manage PRs from this customer.”

The perishable and time-sensitive nature of FMCG products prioritizes safe and timely delivery and returns for manufacturers. Any disruptions in the collection of returned products, such as transportation capacity or temperature constraints, result in wastage. Therefore, our findings underscore the importance of developing effective strategies to overcome challenges such as collection, transportation, and storage that cause significant logistics disturbances and ensure the smooth functioning of FMCG supply chains. Similarly, Bai and Sarkis (2013) contended that the growing disruptions stem from ineffective management of collection, transportation, separation, inspection, storage, and further processing.

5.2.2 Sustainability Disturbances

Our findings suggest that RL for PRs has an influential impact on the sustainability of SCs, particularly in terms of their environmental impact. P2 exemplifies this fact:

“Once a product has been delivered, even if it was delivered incorrectly, the transportation footprint has already been incurred. The product’s carbon footprint is generated during production, from sourcing raw materials and transporting them to the production site, packaging, and shipping the finished product. As such, a significant amount of carbon emissions is already embedded in the product apart from returning it.”

The transportation of returned products generates additional greenhouse gas emissions and resource consumption due to empty trucks travelling to collect small quantities of damaged goods. For instance, irresponsible purchases, such as purchasing multiple items and returning most of them, exhaust SCs and negatively impact the environment. An example from P3 further explains:

“In our industry and other industries such as apparel, customers often make irresponsible purchases and return a large number of items. This has a negative impact on the environment since they may purchase multiple items, keep one, and return the others, which exhausts the SCs.”

Our findings support Shaharudin et al. (2017) theory about adopting green practices in SCs as it becomes essential for global production networks. Also, these study findings highlight the importance of companies adopting environmentally friendly practices, such as collaborating
with other parties to co-load deliveries and returns, to minimize their carbon footprint when running RL operations. The quote from P1 demonstrates this.

“By utilizing other carriers for returns transport instead of relying solely on our primary transporter, we have been able to reduce the number of empty trucks on the road and minimize the environmental impact of our transportation operations. This approach not only reduces our transportation costs but also demonstrates our company’s commitment to sustainability and environmental responsibility.”

Supportively, Soysal (2016) pointed out that many modern SCs, which have reduced their environmental impacts, have successfully improved their sustainability performance. Additionally, our findings indicate that PRs have a significant impact on companies' carbon footprints. Companies should review their approach to managing PRs to minimize their environmental impact. Since PRs prevent companies from achieving their carbon footprint reduction targets, addressing this issue becomes a significant challenge for SC parties concerning CSR activities. Furthermore, our findings draw attention to the importance of sustainable practices in RL operations to minimize their impact on the environment and increase the sustainability of SCs. P3 exemplifies this:

“RL is a growing field that has gained increasing attention from companies in recent years due to its potential to contribute to sustainability goals. By collaborating with other companies to co-load deliveries and returns, firms can reduce their carbon footprint while also achieving financial benefits. This approach involves delivering a product for one company and picking up a return for another company.”

SCM plays a key role here, as the implementation of sustainable practices not only significantly reduces environmental impacts but also leads to cost reduction.

5.2.3 Operational Disturbances

In accordance with our findings, PRs create operational interruptions within SC operations, affecting various departments within a company. P6 illustrates this interruption as:

"The return process incurs additional operations, including processing returns, disposing of damaged goods, and associated costs for the company.”

As the number and volume of products flowing back through the SC have increased, managing PRs has become the most critical activity for businesses (Stock & Mulki, 2009). Our findings
are consistent with this fact and reveal that the process of managing PRs is complex and time-consuming, requiring additional effort to assess the quality of returned products, identify and isolate defective items, and dispose of damaged goods. Our results also indicate that the occurrence of PRs causes disruptions to the receiving team, particularly if the volume of returns is substantial. P2 expressed this disturbance:

“Although we have a pretty large warehouse and receiving area, the returned products may cause some disruption to the receiving team, particularly if the volume of returns is substantial.”

This results in decreased productivity among the workforce as their attention shifts to incidental tasks that are not immediately connected to the forward SCs. This is in line with Christopher's (2000) argument, which claimed that firm management must be capable of sensing and responding to customer demands to conduct successful SC operations and create a positive impact on customers. Furthermore, PRs create additional operational activities for companies, which affect the competitive characteristics of the SC, such as speed, quality, cost, and flexibility. Balancing these factors is critical to the chain's ability to provide the most value to customers and firms involved in the FMCG chain (Bourlakis et al., 2012).

Lastly, our findings shed light on the challenges associated with the operational disruptions caused by PRs. Therefore, companies must invest in effective return management processes and technologies to streamline the return process, identify and isolate defective items, and dispose of damaged goods efficiently. Additionally, retailers should collaborate with suppliers to address the root causes of product defects to reduce the number of returns and associated costs.

5.2.4 Cost and Value Disturbances

The findings of this study indicate that PRs generate additional costs for SC operations, particularly in terms of product handling, transportation, and disposal, which have significant consequences for companies, especially concerning transportation expenses. P1, P3 and P6 exemplify this disturbance:

“In cases where the value of the damage exceeds a specific amount, our policy is to accept a return of the damaged goods. It is due to the fact that the cost associated with returning the transport can be prohibitively high.” (P1)
“Returns generate additional costs for all parties involved, including handling and processing expenses. Contracts typically specify which party is responsible for bearing these costs in the event of claims or returns.” (P3)

“Companies may implement routines to mitigate the costs associated with wrong deliveries. For example, instead of incurring the expense of an additional trip to retrieve a returned item, the company may opt to collect the item during the next scheduled delivery to the customer.” (P6)

These findings are consistent with Hu's (2016) claim that reverse product flow costs up to nine times as much as forward logistics and reduces profits by up to 35%. Our findings also suggest that some suppliers have established policies to mitigate high return costs by accepting damaged goods or collecting returned goods during the next scheduled delivery. Returns have a noteworthy impact on B2B supply chain members, and contracts typically stipulate which party is responsible for handling and processing expenses. Furthermore, returns negatively affect the profits of companies and result in losses that could otherwise be utilized more effectively. P7 shared their company’s loss of revenue because of the PRs.

“Our company generates annual sales of hundreds of millions of Swedish Kronor, yet we discard products worth tens of millions. Despite our efforts to reduce returns, this remains a significant amount. These funds could be better utilized to benefit our customers and employees.”

Thus, companies must consider the condition of the returned product to ensure that they are salable.

Interestingly, our findings indicate that third-party logistics providers are also affected by cost disruption, as they are responsible for the transportation of goods and are held liable for the value of returned goods that were damaged during transit.

In addition, our results suggest that FMCG products are time-sensitive, and their value decreases over time. FMCG products experience a significant value loss upon reaching their expiration dates, and suppliers must compensate retailers for this loss.

“Customers would not return products that have a lower shelf-life. Instead, they would expect compensation for the product. This compensation is for the loss of sales or, however, it may be termed. In some cases, customers may request that the product be returned, but this is not
Blackburn et al. (2004) posited that implementing a responsive RSC is an appropriate method for managing products prone to rapid value depreciation. This assertion highlights the importance of selecting appropriate SC strategies tailored to specific product characteristics to optimize their value and reduce associated costs. Similarly, our findings indicate that FMCG products are prone to damage during storage or transportation, and SC members, therefore, must carefully consider the nature of the products during the return process to maintain their value. The value of returned goods is reduced or lost entirely if the product’s packaging is lost or its temperature is not adequately maintained. Consequently, companies must utilize SC strategies that ensure the value of returns.

Furthermore, Shamah (2013) identified seven types of wasteful activities in SCs: overproduction, waiting time, unnecessary transportation, overprocessing, excess inventory, unnecessary employee movements, and defects. This underscores the significant impact of PRs on generating waste and reducing value within SCs. Our results corroborate this assertion, revealing that PRs are a central contributor to all these wasteful activities and undermine the SC’s value.

In summary, it is evident that the impact of PRs extends beyond transportation and handling costs and has significant consequences for the profitability of companies. Therefore, companies must consider the overall cost of handling returns when establishing their SC strategies. By doing so, they improve their SC efficiency, reduce costs, and maximize their profits. A single company's success is determined by its ability to improve the overall performance of the SC to provide value to customers while reducing waste, the SC's main enemy (Cox, 1999).
6 Conclusion and Discussion

6.1 Conclusion

The purpose of this study was to investigate the drivers of PRs between businesses and the impact of PRs and RL on FMCG supply chains, with a specific focus on the Swedish market. One main conclusion of this study is that it identified the primary drivers of PRs within B2B supply chains in the Swedish FMCG sector, all of which contribute to a disruptive impact on existing SCs. Moreover, the study determined various types of disturbances associated with these PRs and RL activities. To fulfil the purpose of this thesis, two research questions were answered, and a new model was developed (Figure 8). The model shows the drivers for PRs in the Swedish FMCG supply chains and the disturbances resulting from them. Also, it shows the profound relationship between RL and PRs in B2B supply chains and how PRs trigger RL activities.

In answering RQ1, “What are the drivers of product returns between firms in the Swedish FMCG supply chains?” This study unearthed four prominent drivers of PRs: quality, contractual, customer service, and legislation. Each driver encompasses a range of reasons, some of which are distinct and exclusive findings of our research, while others are discussed in relevant academic literature. Specifically, the quality driver comprises damaged products, storing conditions, sensory attributes, and shelf-life and expiry dates. A contractual driver involves wrong deliveries, wrong quantities, and untimely deliveries. Further, the customer service driver includes return policies, business relationships, and collaboration, whereas the legislation driver encompasses laws, country regulations, and product recalls.

The identified drivers for PRs prove the complexity and diversity of the factors contributing to PRs within Swedish FMCG supply chains. These findings highlight the multifaceted nature of PRs and emphasize the importance of addressing these drivers to effectively manage and reduce PRs within SCs in the studied sector. Therefore, it is crucial for suppliers to address these drivers to manage and decrease PRs successfully. Firms can achieve several benefits by acquiring a thorough understanding of these drivers and implementing appropriate measures. These include enhancing product quality and customer satisfaction, optimizing operational efficiency, and complying with regulatory requirements.
Further, in answering RQ2, “How do product returns and reverse logistics activities impact the FMCG supply chains in Sweden?”, this research suggests that PRs and RL between businesses in Sweden create disturbances in logistics, sustainability, operations, and cost and value, which disrupt existing B2B supply chains in the FMCG sector.

PRs significantly impact the efficiency, profitability, and sustainability of SCs operations in the Swedish FMCG industry. The occurrence of PRs creates logistical and operational disruptions, increases the firms’ carbon footprint, generates additional costs, and reduces the value of returned goods. Consequently, companies must establish effective return management processes to streamline the return process, reduce associated costs, and preserve the value of returned goods. To achieve this, companies should consider the condition of returned products and select appropriate SC strategies tailored to specific product characteristics to optimize their value and reduce associated costs. Thereby, companies can improve SC efficiency, reduce costs and waste, maximize profits, and provide value to customers while promoting sustainability within the FMCG industry.

6.2 Discussion

6.2.1 Theoretical Contribution

This study provides intriguing insights and reveals new reasons contributing to PRs among businesses, many of which could be linked to the theories identified in the literature review.

Our study addresses multiple gaps and makes several significant contributions to the literature. First, it extends the limited research on understanding the drivers of PRs in the FMCG sector and their impact on B2B supply chain. We also developed a new model that presents the drivers and impacts of PRs. Our study is among the first to consider PR drivers as a critical antecedent in the FMCG sector. Second, we assess the mediating role of PRs between Swedish FMCG manufacturers and retailers and explain the mechanism through which PRs influence RL. Third, to the best of our knowledge, no previous study has empirically explored the effect of PRs on SC members, particularly manufacturers and retailers, in an academic setting. Previous research has primarily focused on PRs in B2C. This study is one of the first to assess PR drivers and their impact on manufacturers and retailers in the Swedish FMCG sector.

The literature indicated that most current research on PRs focuses on their operational and management aspects. However, it did not provide a theory or empirical evidence of PRs drivers
and their established reasons. Based on our analysis of empirical findings on PRs in the FMCG supply chain between businesses, we propose the following theory:

Within the supply chains of manufacturer-retailers in Sweden, product returns are influenced by a multitude of factors related to the nature of the supplied products, contractual agreements, the maintenance of business relationships, and adherence to Swedish legislation. These factors can be classified into four key drivers: quality, contractual, customer service, and legislation. The occurrence of product returns triggers the implementation of reverse logistics activities within these supply chains, giving rise to disruptions in logistics, sustainability, operations, and cost and value. Notably, these disturbances have an additional environmental impact, impose costs on the suppliers, and devalue their products, potentially resulting in a complete loss of value for the returned products. Moreover, these disturbances extend beyond the retailers and suppliers, encompassing all participants in the supply chain, including transportation providers.

6.2.2 Managerial Implications

This research findings have significant implications for the managements of SCs operating in the FMCG sector. To effectively manage PRs and RL, suppliers must implement various measures such as ensuring product quality, timely delivery of the right products, compliance with market laws and regulations, providing high-quality services, and developing balanced return policies. Collaboration with retailers and the adoption of sustainable practices are also crucial. Management’s thorough understanding of PRs drivers and their impact on RL is essential to creating proactive approaches necessary to enhance sustainability, improve customer service, streamline operations, and minimize costs while preserving the value of returned goods.

6.2.3 Ethical Implications

The ethical implications of this study concern the responsibility of SC members to ensure their product quality and meet customer expectations to avoid PRs, which can reduce waste and economic losses. Suppliers and retailers have an ethical obligation to ensure that products possess adequate characteristics and meet customer expectations. Neglecting this responsibility gives rise to PRs, which not only result in financial setbacks but also degrade the company's reputation and undermine customer trust.
Another significant ethical consideration is the environmental impact of PRs. Returned products contribute to waste and pollution, adversely affecting the environment. Therefore, SC actors must implement measures to reduce the incidence of PRs, such as ensuring product quality during handling and transportation, placing accurate orders, and fostering communication and collaboration between SC members.

Finally, suppliers have an ethical responsibility to be transparent and honest with retailers about their products’ quality. Misrepresenting product quality, such as by labelling expired or substandard products as new, can be unethical and harm customer trust. Thus, it is essential for SC actors to ensure that their products are accurately labelled and that customers are informed of any potential quality issues.

6.2.4 Limitations

While this thesis effectively addresses the research questions concerning the drivers and disturbances of PRs in B2B supply chains, it has several limitations that warrant consideration. One such limitation is its narrow focus on a single sector and one segment of the SC, which limits the generalizability of the identified PRs drivers to other sectors and SC segments. Additionally, the limited sample size used in this study due to time constraints may not support generalization, as a larger sample could have enhanced the robustness of the findings. This limitation introduces the possibility of omitting valuable information that could alter the presented results.

Moreover, this study’s focus on the Swedish market implies that its findings may not be generalizable to other countries as regional differences could result in different PRs drivers and disturbances. Additionally, the qualitative research design employed in this study may have lacked objectivity due to the researchers’ interpretations. Furthermore, this study did not consider SCs strategies for PRs or RL barriers by virtue of its specific research purpose.

Lastly, the finite theoretical background on PRs drivers and their disturbances in the academic literature hindered a comprehensive examination and comparison of this study’s findings with those of previous research.

6.2.5 Future Research

Several key areas can be targeted for future research in PRs and SCM. Investigating the factors that drive PRs and RL can help establish if there is a cause-and-effect relationship between them. Further studies can also examine how SCM strategies can reduce PRs and provide
insights into effective ways to mitigate them. Conducting studies that compare different sectors can reveal the similarities and differences in PRs and RL phenomena. By studying various industries, researchers can gain a more complete understanding of PRs and their impact.

To improve knowledge of PRs in the FMCG sector, future research could concentrate on multiple cases within the same industry, allowing for a more thorough analysis of the phenomenon. Furthermore, examining whether the drivers of PRs that have been identified are applicable to other sectors and assessing if similar disruptions occur would contribute to a wider understanding of the issue.

In light of this study’s limitations, future research could use quantitative methods to measure the interrelationship and impact of PRs and SC disruptions. This would provide empirical evidence to support the findings. Since this study was conducted in a specific country, examining whether the identified drivers and disruptions are transferable to other countries would expand the knowledge base. It is important to determine if these findings are unique to Sweden or relevant in a wider international context.

Lastly, since this study focuses only on B2B supply chains, it would be interesting to assess the PRs phenomenon from other perspectives, such as the B2C perspective or manufacturer-principal perspective.
7 References


8 Appendix

8.1 Appendix 1 – Interviews Questions

8.1.1 Questions for Retailers

1- Would you kindly provide consent for recording this interview?
2- May we request that you state your name, company name, position, and duration of employment with the company?
3- Have you previously worked in the FMCG industry, and if so, for what duration?
4- What is the nature of the products that your company currently deals with or has dealt with in the past?
5- How does your company manage logistics activities such as returns logistics?
6- How frequently does your company return products to your suppliers?
7- What is the percentage of product returns, or what is the estimated value of returned products?
8- What are the reasons behind your company's decision to return products to its suppliers?
9- Can you name the reasons behind product returns?
10- How do product returns impact your company's operations?
11- How do product returns affect your company's profits?
12- What is the procedure that your company follows to handle product returns?
13- What steps can your company take to minimize the number of products returned to its suppliers?
14- In your opinion, what is the most effective way to handle product returns - outsourcing to a third party, requesting the supplier to collect the goods, or utilizing your company’s logistics network to send them? Why do you prefer this option?
15- Are there any issues/challenges that your company faces in relation to returning products, such as handling, storage, transportation, credit, or cost?
16- How do you perceive the relationship between product returns and reverse logistics?
17- In what ways can returned products benefit your company?
18- Why do you believe that reverse logistics is crucial in today's business world? What is the significance of reverse logistics in the current business landscape?
8.1.2 Questions for Manufacturers

1- Would you kindly provide your consent for recording this interview?
2- Could you please state your full name, the name of the company you work for, your position, and the duration of your employment at the company?
3- Have you had any prior experience in FMCG? If so, how long was it?
4- What is the nature of the products that you currently deal with or have dealt with in the past?
5- How does your company manage logistics activities, such as supply and returns logistics?
6- How often does your company receive product returns from customers/retailers?
7- What percentage of product returns does your company typically receive, or what is the estimated value of returned products?
8- How does your company forecast product returns?
9- What are the reasons? Why may your company experience product returns?
10- How do product returns affect your company's operations?
11- How do product returns affect your company's profits?
12- How does your company handle product returns?
13- How can your company reduce the number of returned products?
14- In your opinion, what is the most effective way to handle product returns - outsourcing to a third party, requesting the retailer to send the goods back, or managing the returns with your own logistics network? Why do you prefer this option?
15- How significant are product returns for your company, and why?
16- What challenges are associated with product returns?
17- Could you share with us some strategies that your company employs to reduce product returns?
18- What is your view on the relationship between product returns and reverse logistics?
19- How can returned products benefit your company?
20- Why do you believe that reverse logistics is critical in today's business world, and what is its significance?
8.2 Appendix 2 – Company (A) Description

Company A is a global food and beverage company that has a substantial focus on promoting health through its product portfolio. The company's origins can be traced back to the early nineteenth century in France when the founder created the first yoghurt. Throughout its long social mission journey, Company A has established a business model that is rooted in its socio-economic heritage.

Company A's product portfolio includes dairy, special nutrition, and water and drinks. With over 100 brands distributed in more than 120 countries worldwide, Company A is recognized as one of the leading manufacturers and suppliers in the food and beverage industry in Sweden and the world.

Currently, Company A is considered the number one company globally for fresh dairy products and plant-based foods and beverages. Additionally, it is ranked second in the world for packaged water and early-life nutrition products. The company is also the top-ranking brand for adult nutrition in Europe.

With almost a century of experience in the industry, Company A has a workforce of approximately 98,000 employees spread across more than 55 countries. In 2021, the company recorded sales of 24.3 billion euros, representing a sales growth of 3.4%. Furthermore, the company has been certified with a "B certification" due to its adherence to the highest standards of social and environmental performance, accountability, and transparency across its operations, business model, and supply chain management.

Company A has taken significant steps towards sustainability in its packaging and sourcing practices. Since 2015, it has managed to reduce its CO2 volume by 27.1% on a like-for-like basis. Its mission is to provide quality, safe, and trendy products to everyone on the planet.