Navigating the Grocery Supply Chain in Sweden

Insights from Consumer Behavior and Service Provision amidst the COVID-19 Pandemic

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Abstract

This thesis aims to analyze the impact of COVID-19 on service provision across the grocery supply chain. Through qualitative analysis of interviews with Swedish grocery shoppers, coupled with an extensive review of existing literature, the study uncovers several key insights. Firstly, the pandemic prompted a significant shift towards online grocery shopping out of necessity for safety, with consumers embracing digital platforms for their shopping needs. Despite the easing of restrictions post-pandemic, a substantial portion of consumers continued to utilize online services, indicating a lasting impact on consumer behavior. Safety and health concerns emerged as paramount factors influencing shopping decisions, underscoring the need for retailers to prioritize safety measures and reassure customers of their commitment to health and well-being. Additionally, incentives such as promotional offers and free deliveries played a significant role in influencing consumer behavior, highlighting the importance of value-added services in enhancing the overall shopping experience. However, challenges such as supply chain disruptions and logistical constraints were encountered, emphasizing the need for robust logistics systems and efficient order fulfillment processes. The results of this research study have some practical implications for grocery retailers and supply chain managers in efficiently managing the post-pandemic scenario. It is key for all stakeholders to understand the drivers of change in consumer behavior and adjust their provision of services accordingly to put themselves in a winning position as part of a digital, dynamic marketplace. Finally, the study has pointed out future research directions for longitudinal studies able to monitor consumer preference in time and further investigation concerning sustainability and increasing reliance on services of home delivery.

Keywords: COVID-19 Pandemic, Online Grocery Shopping, Consumer Behavior, Supply Chain Dynamics, Last-Mile Delivery

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List of abbreviations

CDSC	Customer Driven Supply Chain
IPR	Intellectual Property Rights
CCSC	Customer Centric Supply Chain
GSCM	Green Supply Chain Management
QDAS	Qualitative Data Analysis Software

1. Introduction

In this chapter a background will be given on the current situation and then its problems will be described. Thereafter, the research question and purpose will be defined. Research scope would conclude this section and explain the research delimitations.

1.1. Background

In recent years, e-commerce has greatly affected companies, customers, and the market all together and contributed to significant changes to the economy (Rosencrance, 2023). Brick-and-mortar stores are still feeling the pressure as internet sales rise at a high rate. While thousands of physical establishments have gone out of business, an increasing number of internet stores open every day. Businesses may work more efficiently with suppliers, buyers, and procurement departments by utilizing software solutions and e-commerce in the supply chain. This simplifies all decision-making processes involved in the supply chain (Bigcommerce, 2023). Furthermore, e-commerce has changed business operations and customer engagement and allowed businesses to reach more people and offer products and services globally through online buying options (Rosencrance, 2023). Service providers can gather customer preferences of visiting customers by analyzing the data obtained and eventually utilizing them to enhance the customer experience. This may also result in development of an improved supply chain management system and furthermore increase the chance of selling more products (Tamrazyan, 2022). Rosencrance (2023) adds that the companies do this to maintain competitiveness, however, embracing these practices introduces challenges for them. E-commerce relies heavily on employing technology, therefore adoption of various digital solutions, such as mobile payment platforms and online marketplaces, can be costly for them. For instance, Blockchain technology is increasingly being applied in supply chain management to enhance traceability and transparency which results in reducing fraud and enhancing productivity. Moreover, the reliance on technology in e-commerce extends to various aspects of supply chain management, including logistics. For online retailers, efficient management of shipping, warehousing, and delivery schedules is crucial for success, especially when navigating complex international borders and customs regulations.

Knowing all these, the planet we live on recently encountered a really disruptive but also influential phenomenon which feeds the main idea of conducting this study. Nahleh et al. (2023), in their research, state that the global COVID-19 pandemic substantially impacted supply networks, causing disruptions across nearly all industries. Additionally, food loss during the pandemic caused by factors such as lack of workforce, higher transportation costs, and inadequate storage facilities, which all together disrupted the logistics in the food value chain. Food supply chain was one of the key industries that was greatly affected as it impacted the entire business process from the supplier to the customer. As Moosavi et al. (2022) explains retail businesses faced supply issues, which subsequently affected consumer behavior by creating

stress over food availability. Moreover, Some countries imposed severe control measures, such as lockdowns and border restrictions, seriously disrupting the supply chain. Border restrictions were enforced by several nations, which caused global supply chains to become unstable, mostly due to concerns about the virus spreading through food. These had a negative effect on availability, quality, freshness, safety, access to markets, and affordability (Moosavi et al., 2022). In response to these challenges, businesses are prioritizing the restructuring of their supply chain strategies to bolster resilience, sustainability, and collaboration with stakeholders. This strategic shift involves initiatives like employee retraining and investment in advanced supply chain technologies like robotic process automation, artificial intelligence, and analytics, as underscored by research conducted by Harapko (2023).

In a case study analyzing the effectiveness of digitized supply chains during the COVID-19 pandemic, Subramanian et al. (2021) examined how two companies managed supply chain disruptions in 2020 with the help of leveraging digital tools and technologies. A company, an established e-commerce player, utilized order tracking, inventory visibility, and big data analytics to ensure timely deliveries, maintain supplier communication, and gain insights into profitability and operational efficiency. Moreover, they employed predictive analytics and algorithms for accurate sales forecasting and demand planning. Similarly, another company capitalized on its e-commerce platform amidst pandemic-related lockdowns by integrating time series analysis, predictive models, and robust big data management into its supply chain operations. This approach facilitated order tracking, inventory management, and customer satisfaction, highlighting the significance of digitalization in enhancing supply chain resilience and adaptability during unprecedented disruptions like the COVID-19 pandemic.

1.2. Problem description

While e-commerce has been around for decades, e-grocery shopping hasn't been a big part of it (Wang et al., 2020). Before Covid-19, consumer hesitation, lack of trust, and unfamiliarity hindered widespread adoption of online grocery shopping (Tyrväinen & Karjaluoto, 2022). In 2019, a staggering 81% of US consumers had never ventured into online grocery shopping, but by 2020, this landscape had dramatically shifted, with 79% of consumers opting for online grocery orders, resulting in a significant spike in online grocery sales (Forbes, 2020). This paradigm shift can be attributed to the COVID-19 pandemic, which compelled consumers to prioritize online channels for their shopping needs (Pan et al., 2020; Pantano et al., 2020; Shen et al., 2022; Tyrväinen & Karjaluoto, 2022), particularly evident in the grocery sector where sales surged towards online platforms (Pantano et al., 2020; Tyrväinen & Karjaluoto, 2022). This period reflected the early stages of innovation adoption, with only early adopters embracing online grocery delivery (Güsken et al., 2019; Hobbs, 2020). During the pandemic, many consumers tried online grocery delivery for the first time. This surge of new users accelerates the adoption curve, compared to the pre-pandemic scenario. While some may revert to traditional

methods post-Covid-19, many consumers are likely to continue using online grocery delivery services after experiencing their convenience (Hobbs, 2020).

Primary determinant of online grocery purchase intentions is the consumers' perspective on online grocery shopping (Hansen et al., 2004). However, Tyrväinen & Karjaluoto (2022) meta-analysis on pandemic-related research on e-grocery shopping shows the pandemic-induced shift decreased the significance of perceived usefulness and attitudes towards online grocery shopping. In fact, the surge in online grocery shopping was not primarily driven by consumers' perception of usefulness or positive attitudes towards online services, but rather by necessity. Therefore as necessity disappears, a resurgence in the importance of these determinants could potentially lead to a decline in online grocery sales if retailers fail to influence perceived usefulness and shape consumer attitudes towards online grocery services effectively. A study by Dannenberg et al. (2020) on the German e-grocery market suggests while pandemic and "stay-at-home" policies created an opportunity for online grocery shopping to become more popular, the expansion of online grocery delivery remained limited spatially, with both large and small businesses focusing more on meeting increased demand rather than broadening their reach. In addition, there was no indication of a permanent shift from traditional to online food retail. Overall, widespread adoption of e-groceries and a comprehensive transition of the retail sector are unlikely to occur in Germany in the near future (Dannenberg et al., 2020). Brüggemann & Olbrich (2023) further reveals online grocery shop operators in Germany struggled both to retain existing customers and to attract new ones among consumers who remained at home during the lockdown.

Moreover, consumer behavior has undergone significant changes in response to the COVID-19 pandemic. Retailers and supply chain managers have responded by implementing new strategies to adapt to evolving consumer demands, reflecting changes in spending habits influenced by the pandemic's impact on the economy, society, and psychology. Customers have demonstrated altered purchasing behaviors, such as spending less on non-essential items and prioritizing necessities (Das et al., 2022). Additionally, consumers have switched brands and goods, replaced purchases when they ran out, and developed a greater awareness of products related to cleanliness and health, leading to modifications in dietary and lifestyle habits. Moreover, consumers' attitudes, behaviors, and purchasing patterns are evolving, with many new practices expected to persist post-pandemic. While purchases are primarily driven by basic needs, consumers are increasingly embracing digital commerce, making more thoughtful purchases. The COVID-19 pandemic served as a catalyst for shifts in consumer behavior, influenced by situational, cultural, demographic, and sociological factors, including panic buying and impulsive behavior, indicating the significant impact of social elements on purchasing behavior (Tao et al., 2022).

Furthermore, during the COVID-19 pandemic, the grocery supply chain faced major challenges, as highlighted by Saarinen et al. (2020) in their study on some grocery supply chain-related companies in Finland. Their research mentioned infections among production employees which triggered disruptions in the supply chain due to the absence of human operators in various production phases. Moreover, consumer panic-buying behavior, particularly for non-perishable and hygiene items, intensified the strain on supply chains, which resulted in sudden and sustained demand spikes. Some manufacturers struggled to adapt promptly to the fluctuating demand, leading to increased stockouts and overall performance decline. The disruptions caused by the pandemic further exacerbated decision-making distortions throughout the supply chain and therefore amplified negative impacts and caused persistent food shortages. The surge in demand across product categories in grocery retail created numerous supply bottlenecks and inefficiencies in service provision. It can be said that it initially started in logistics closer to consumers and later extended to production capacity at manufacturers as distribution warehouse inventories got empty. These all underscore the necessity of specific supply chain management capabilities including resource planning, plant management, communication, sales and operations planning, and supply chain control. Without these capabilities, the grocery supply chain would be ill-equipped to address the challenges posed by disruptions, which potentially leads to exacerbated panic shopping and compromised performance.

Since the beginning of the pandemic, researchers have been discussing, explaining and analyzing the challenges and risks faced by the grocery supply chain due to COVID-19, with some considering different specific countries. However, there are still not many articles regarding the post-pandemic and surge in online grocery shopping where researchers analyze how this phenomenon has affected the industry and supply chain and what were the effects in providing their services and what lessons can be learnt, especially in Sweden. Mckinsey (2020) mentions the importance of scale and location when studying grocery supply chain, as a country like the US with lower population density would have somewhat different problems to solve and providing e-grocery services would be more challenging, compared to EU countries.

1.3. Research question

In order to understand the recent shifts in consumer behavior and supply chain dynamics, this study aims to answer the following question:

How has the COVID-19 pandemic impacted the service provision in the grocery supply chain?

1.4. Research purpose

This study aims to investigate the factors influencing the demand for services in the grocery supply chain, particularly in light of the evolving landscape of e-commerce and changing consumer behaviors. With significant shifts observed in consumer preferences and purchasing patterns, especially accelerated by the COVID-19 pandemic, understanding the drivers behind

these changes is crucial for stakeholders in the grocery industry. Additionally, this research seeks to assess the impact of the COVID-19 pandemic on service provision within the grocery supply chain. By examining how the pandemic has reshaped consumer behavior and supply chain dynamics, this study aims to provide insights into the strategies and adaptations necessary for grocery retailers and supply chain managers to navigate the post-pandemic landscape effectively.

1.5. Research scope

Collis & Hussey (2021) suggests a good research project has a scope which can include a specific attribute like geography including, as it helps the researcher to focus on collecting relevant, and manageable information and data. In this study, the authors opted to narrow its scope to Gothenburg, Sweden. The main decision to opt for Gothenburg will be discussed later in the methodology section. But so to know, Gothenburg has robust infrastructure and a well-developed retail landscape and is a pivotal urban center within Sweden with its second largest population in Sweden. By focusing on this locale, the study taps into a population with a wide understanding of both online and offline grocery shopping, as many providers operate in it.

2. Literature review

This chapter discusses the changing factors of the grocery supply chain from three perspectives: consumer influence on the supply chain, grocery supply chain, and service provision. In this structure, each factor is explained, discussed, and illustrated with examples.

2.1. Consumers Influence on Supply Chain

In recent decades, there has been a growing acknowledgment of the pivotal role customers play within supply chain operations (Martinelli & Tunisini, 2018). In their study, they explored this evolution where initially, during the 1980s, the rise of lean management and lean supply approaches introduced a concentration on a demand-driven production model (Houlihan, 1985; Stevens, 1989; Womack et al., 1990). This trend continued into the 1990s, with literature delving into the correlation between a company's procurement processes and its customer relations (Harland, 1996; Novack & Simco, 1991). By the 2000s, scholars purposefully embraced integrating customers into supply chains, while the 2010s marked widespread acknowledgment, by both researchers and practitioners, of the active role customers play in supply chain processes (Borgström et al., 2011).

As per Esper & Peinkofer (2017), the interplay between consumers and the supply chain is mutually influential. Their research around relevant literature suggests that supply chains can affect consumers in two ways; through strategies and processes, and service outputs. Supply chain strategies and processes can directly influence consumers with shared information during purchase process, service and delivery or return time details, availability of product, providing options to choose from, and service recovery in failure or return scenarios. Also, supply chain outcomes can have an indirect effect on consumers behavior or perceptions. The behavioral

impacts resulting from supply chain operations would be on buying more valued products, size and frequency of orders, keeping customers, being referred, repurchasing, and becoming loyal. The perceptual impacts resulting from supply chain operations would be on overall purchase satisfaction and service quality assessments. On the other hand, consumers can reciprocally affect supply chains through shopping and purchasing scenarios. Supply chains can be influenced by consumers' certain products purchasing behavior, buying reasons, and segmentation. In addition, recent focus on creating an omnichannel-based retail environment has resulted in more interaction between supply chain and consumers. These all imply that consumers' insights are crucial when companies offer supply chain management services.

In their study on manufacturing firms in Finland, Laari et al. (2016) found that customers are key drivers in implementing internal Green Supply Chain Management (GSCM) practices, with research findings indicating their significant influence on environmental monitoring within supply chains. These results are aligned with Thun & Müller (2010) study on the German manufacturing industry concluding environmental initiatives are primarily motivated by customer demands. Similarly, Chavez et al., (2016)'s findings of a survey on 126 China-based automobile manufacturers suggests that adoption of GSCM practices is notably influenced by customer pressure. This customer pressure prompts manufacturers to adopt and extend GSCM practices to suppliers. Notably, environmental monitoring of customers contributes to improvements in environmental performance. However, collaborative efforts with customers and suppliers do not directly impact environmental performance. Nevertheless, environmental collaboration with customers is directly linked to financial performance. Internal GSCM practices indirectly affect environmental performance through collaboration with customers. Combining customer collaboration with internal GSCM proves effective in improving financial performance. Manufacturers respond to customer pressure by extending internal GSCM practices to suppliers, recognizing the need for collaboration to set environmental goals. This underscores the necessity for manufacturers to engage proactively with customers beyond organizational boundaries (Laari et al., 2016).

A conceptualization of the future of grocery retail supply chains, by Vallandingham et al. (2018) based on a framework for grocery retail supply chain planning and control, adapted from Hübner et al. (2013), suggests that future grocery supply chains are deeply intertwined with implementation of enabling technologies that are based on consumer trends. These technologies offer end-to-end visibility and real-time insights, enhancing agility, efficiency, and transparency throughout the supply chain. By optimizing operations, automating tasks, and reducing waste, these advancements enable supply chain planning to become more dynamic, flexible, and holistic. Despite the potential benefits, challenges such as technological development costs, data analysis expertise, and trust between food suppliers and retailers remain. However, the feasibility of implementing these concepts is evident, although with varying degrees of readiness across different scenarios. By leveraging strategic procurement, warehouse analysis, distribution

planning, and retail store operations, these technologies facilitate better alignment with consumer demands while addressing challenges like demand forecasting, product allocation, and waste reduction.

Fornasiero et al. (2021) proposes ten strategies to overcome the challenges of current and future supply chains, where a Customer Driven Supply Chain (CDSC) is one of them. They claim, in recent years, there has been a swift evolution in the consumer's role, marked by a growing population of knowledgeable, well-informed, and up-to-date individuals, navigating a marketplace offering an unprecedented array of product choices. New consumption patterns formed and empowered by middle-class boom (Kharas, 2017), individualism emergence (Martinelli & Tunisini, 2018), personalisation trends (Deloitte, 2015), Intellectual Property Rights (IPR) (Pauer et al., 2018), sustainability consciousness (Blasco & King, 2017), privacy concerns, and do-it-yourself (DIY) paradigm.

In response, Fornasiero et al. (2021) suggests innovative solutions essential for integrating into a CDSC strategy, further detailed in subsequent points. Firstly, facilitating collaboration and orchestration to synchronize all actors in the supply chain and fulfill customer demands is vital for fostering agile and responsive supply chains. Secondly, transitioning to customer-driven manufacturing necessitates leaner and more adaptable supply chains, mandating proactive procurement, JIT delivery, and on-demand forecasting. Thirdly, the complexities of personalized shipping require astute management solutions to navigate delivery and packaging challenges efficiently. Fourthly, meeting individualized demand requires advanced data handling tools with the help of AI, machine learning, and cloud computing while safeguarding data privacy. Fifthly, evolving business models call for collaborative B2B technologies (Asare et al., 2016) and standardization to address global customer needs effectively. Sixthly, ensuring supply chain traceability is paramount for bolstering customer trust and safety, especially in combating counterfeit products. Lastly, safeguarding IPR is imperative amidst increased data exchange and customization practices between customers and suppliers. Implementation of a CDSC strategy may lead to increased timeliness and accuracy of customer data, heightened satisfaction and loyalty, enhanced customer participation in design and production, reduced time to market, improved responsiveness with shorter lead times, and fewer returns.

In a study on a limited set of companies across various industries around Europe employing diverse supply chain strategies, (Pessot et al., 2021) explored a first-tier supplier in food processing implementing a CDSC strategy. This company prioritizes innovation and utilizes advanced data analytics to understand market trends, ensuring the development of high-quality products delivered on time. Procurement and delivery processes are demand-driven and optimized through digital platforms, fostering seamless communication with suppliers and customers. With a fully digitalized production process, agile manufacturing allows for swift adjustments based on real-time data. Additionally, strategically located production units facilitate

make-to-order shipping and efficient last-mile delivery, enhancing customer satisfaction. Putting industry aside, observations on the studied companies conclude that a CDSC strategy should and could be part of all key practices of a supply chain, including products and services, sourcing, production process, supply chain configuration, and customer relationship, along with almost all of their subset activities.

Alongside a customer-driven supply chain (CDSC) approach, a similar approach sits beside it, named customer-centric supply chain (CCSC). CDSC and CCSC approaches are similar, but have different characteristics. A CCSC approach is derived from a CDSC in order to adapt to more intricate supply chains of modern day. A CCSC approach considers supply chain operations to be more adaptable, versatile, and tech-enabled, emphasizing the integration of the customer as a proactive actor (Martinelli & Tunisini, 2018). Integrating the customer into the structure of a supply chain delivers distinct value to all stakeholders, offering an enhanced competitive advantage across the entire supply chain (Jüttner et al., 2006; Martinelli & Tunisini, 2018). Supply chain members need to swiftly synchronize their collective capabilities to effectively adapt to fluctuations in both demand and supply. There should be a shift from CDSCs to CCSCs due to the growing trend towards personalized customer preferences, the heightened unpredictability of business environments, and the pervasive influence of the digital revolution . However, the majority of studies examining customer integration often equate these two approaches (Martinelli & Tunisini, 2018).

2.2. Grocery Supply Chains

A typical traditional grocery supply chain operates without the support of digital and intelligent technologies (Beamon, 1998). However, now that the surface of the grocery industry has changed, a modern supply chain can be defined as an intricate web of linked procedures, and technological advancements working together to successfully and efficiently provide consumer goods and services (Strand et al., 2024). With the rapid development of e-commerce, the grocery supply chain planning and control are directly impacted by enabling technology. Enabling technology and altering grocery retail planning and control will help satisfy consumer requests and match market expectations. In addition, the high Internet penetration rate, the continual availability of fresh information, and the ability to compare prices and product characteristics all substantially impact customer demand patterns and buying behavior (Agrawal and Narain, 2018). With the potential of current technologies, a modern supply chain competitiveness greatly depends on how existing supply chain models are integrated with cyber-physical systems, cloud and mobile computing, data analytics, additive manufacturing, blockchain, and other technologies (Strand et al., 2024).

In early twenties, Boyer et al. (2005) suggested if you want not to fall behind in competition with your competitors in the market, you need to use advanced supply chain approaches and also take care of your customers' needs simultaneously. Therefore, extending supply chains to prioritize

service delivery offers grocers a distinctive opportunity for differentiation. A good example where benefits of both consumers and suppliers are taken care of are supply chain strategies employed by Walmart to reduce costs, such as vendor-managed inventory, real-time tracking of inventory and sales at store level, and cross-docking of high-demand items at distribution centers. These understandings around 2002 was the start point of delivering groceries right to the hands of customers. However, the grocery industry faces tough hurdles like slim profit margins of 1–2%, perishable goods, diverse customer preferences, and a focus on low prices. Therefore, to extend grocery supply chains, retailers and manufacturers can employ four strategies. Firstly, prioritizing convenience through consumer-direct ordering caters to customer preferences for ease and accessibility, exemplified by companies like Amazon (Amazon.com). Secondly, offering customization enhances customer value and loyalty. Thirdly, ensuring quality, particularly in service delivery, can differentiate retailers, exemplified by online grocers like FreshDirect (freshdirect.com). Lastly, enhancing the overall shopping experience, either by streamlining transactions or fostering genuine human interaction during delivery, can significantly impact customer perceptions and loyalty. By strategically implementing these tactics, companies can thrive in today's competitive market landscape.

2.3. Service Provision in Grocery Supply Chain

To set a ground for discussing service provision in the literature, that is aligned with the research question, meaning considering supply chains that have consumers in mind for providing services, this study decides to adapt the four-part strategy suggested by Boyer et al. (2005). Therefore, this section will discuss service provision in a grocery supply chain with these four principles: providing consumers with convenience, allowing customization, ensuring quality, and enhancing overall shopping experience.

First to consider is that ensuring customer satisfaction entails a multifaceted approach encompassing various components such as efficient delivery services, safety considerations, service incentives, and obstacle removal (Wang et al., 2021). Magalhães (2021) states logistical customers' preferences is one of the main points to consider while planning an effective customer service (Bowersox et al., 2020). He adds that two methods to deliver the online grocery shopping of customers are direct and indirect delivery. Direct delivery is the most common method which needs customers to be at home (Kämäräinen, 2003). An indirect delivery needs customer effort to pick up its order and it can be a temperature control equipped delivery box with capabilities (Kämäräinen, 2003) near a residential area or be an automated locker located at a public transport station, transported by crowdshipping services (Simoni et al., 2020). Another indirect delivery method would be at pickup sites located at the grocery store or distributor warehouse (Chopra, 2003).

Building on the importance of delivery methods, Boyer & Hult (2005) research shows that grocers employing indirect delivery systems face the added challenge of ensuring top-notch

service quality. As per Magalhães (2021), consumers prefer to receive their delivery all at once. Based on different factors such as consumers interests and their location, grocers offer multiple delivery time slots which aim for delivery optimization. The perceived service quality of online grocery shopping strongly is influenced by the structure of these slots. Boyer & Hult (2005) point out that efficient integration of IT, manufacturing, and marketing is vital for successful online grocery delivery. As customer expectations rise and channels converge, companies must excel in all aspects of their service provision. Failure in one area affects the entire operation. Boyer et al. (2005) refers to last-mile delivery of groceries or other retail sectors as one of the main competitive advantages, and therefore an area in which investment is necessary. But retailers need to consider that expansion and investment should match customer acceptance rates to ensure sustainable growth (Boyer & Hult, 2005). Grocers must first assess their supply chain orientation and consider potential competitive threats. By exploring how last-mile delivery can strengthen customer relationships, they can identify a suitable strategy aligned with their goals (Boyer et al., 2005). Furthermore, a study on consumers' choice of grocery retail store in Italy by Bellini (2015) shows that grocers are not different enough to be recognized distinctive among their competitors, even if they are operating different store formats. This is mostly due to utilizing only two retail levers, range and pricing of products. Therefore, she suggests in order to gain a better competitive advantage and enhance store image as a definitive differentiator for retail grocery stores, grocers need to leverage other retail levers such as in-store marketing, services, and technology.

It is also understood that consumers' preferences and buying habits directly impact product sales and supply chain operations (Zhang and Song, 2016). Customers initiate demand, and their purchase decisions influence order number, type, and delivery needs within the logistics distribution system. It is also understood that consumer tolerance for supply chain errors has drastically decreased over time, making any deviation unacceptable in modern supply chains (Lysa et al., 2022). Therefore, to increase customer happiness, retailers should focus on product after-sales policies and arrival flexibility. While time-based sales techniques on e-commerce sites can attract customers, it's essential to tailor any approach to the specific product and diverse customer preferences (Zhang and Song, 2016). Moreover, in today's market, optimizing logistics systems according to end-consumer preferences is vital for embracing the Industry 4.0 concept (Lysa et al., 2022; Michlowicz, 2021).

Among these considerations, it is also important where the service provision is going to occur or where the consumer wants to receive the service. It is known that the online customer experience carries greater risks than traditional shopping which needs careful consideration (Olsson et al., 2021). The modern lifestyle, characterized by limited free time, drives consumers toward online shopping as they seek to minimize shopping time and maximize time for other activities. Therefore, customer waiting experiences are also a crucial factor in online service usage. Research emphasizes the time-saving element of convenience, particularly the negative effects of

prolonged wait periods (Duarte et al., 2018). Morganosky & Cude (2000) also had mentioned that convenience of compiling orders gradually and checking recipes or kitchen supplies while browsing are what make online grocery shopping distinguished compared to traditional way of shopping. Also, consumers naturally expect personalized service, reasonable pricing, timely delivery, and minimal stock issues from online grocers. Similarly, Boyer et al. (2005) points to efficient management of last-mile delivery in the supply chain as a kind of business model that provides customers with added convenience without substantially raising costs. This service caters to today's affluent but time-constrained individuals, offering a valuable solution in our modern society. Furthermore, Duarte et al. (2018) found that as the time customers spend on a service increases, their perceived convenience decreases. This highlights the significance of online businesses offering comprehensive and easily accessible product information (Farida & Kin, 2016). Another factor of convenience for online retailers can be prioritizing factors that streamline transactions, such as payment assurance, flexibility in payment access, and overall ease of payment process (Lee, 2002).

For instance, in Sweden, an increasing number of consumers opt to purchase their groceries online, either through local grocers or online retailers (Olsson et al., 2021). They argue that taking consumer preferences into account leads to changes in logistics operations. Retail and distribution managers are encouraged to adopt a diversified approach to service offerings, empowering consumers to choose options that align with their preferences. This shift entails a holistic view of delivery services, integrating operational efficiency with consumer-centric strategies. Managers should evaluate the six dimensions of the unattended delivery experience, spanning cognitive, emotional, behavioral, sensorial, physical, and social responses. By addressing these dimensions, distribution and logistics managers in e-grocery retail can enhance the delivery experience. Moreover, meeting consumer demands for smaller and more frequent deliveries necessitates logistical innovation, such as automated fulfillment centers, to enhance flexibility and adaptability. However, despite this trend, Sweden currently lacks unattended grocery delivery options.

Pricing strategies also play a significant role in the online grocery sector. Cebollada et al. (2019) findings show that online shopping tends to reduce households' price sensitivity, opening opportunities for strategic pricing approaches. For example, even in an online setting, zone pricing tactics can be applied through zone promotions, providing greater discounts to customers residing nearer physical stores. Furthermore, distinct shopping behaviors emerge among various types of shoppers, including online-only, offline-only, and mixed-approach shoppers. Understanding these differences is crucial for tailoring pricing and marketing strategies effectively. Moreover, Zheng et al. (2012) highlight there are certain benefits in special treatment for clients with long-standing connections to businesses, including discounted prices, expedited service, and personalized experiences. Also, they mention that without financial incentives, customers are less inclined to stick with a brand or engage in repurchasing when they're unhappy.

However, the situation is not always normal therefore addressing the unpredictability of supply chains is another important point to consider. Supply chains are inherently unpredictable due to the numerous potential hazards they face (Carissimi et al., 2023), with unpredictable consumer demand patterns being a significant contributor (Agigi et al., 2016; Oke & Mohan, 2009). Consumers' buying patterns can be difficult to forecast, adding to this inherent uncertainty (Agigi et al., 2016). Taylor (2006) also mentions that the dynamics of the grocery supply chain change due to many factors where consumer demand plays a central role in shaping it. Therefore, understanding and responding to consumer preferences, trends, and behaviors is critical for retailers, manufacturers, and suppliers to effectively manage inventory, optimize product assortments, and ensure customer satisfaction. According to Taylor (2006), demand management is an area where difficulties and inefficiencies exist in practice, affecting the supply chain's operational performance. Changing consumer preferences, food trends, and lifestyles impact supply chains' operations. Preferences for organic, locally sourced, or sustainable products may influence sourcing decisions and supply chain strategies.

Disruptions in supply chains further complicate service provision. According to Barman (2021), disruptions in grocery supply chains can be caused by a variety of events such as pandemics, labor shortages, transportation industry strikes, and natural disasters. These disruptions may hinder the movement of goods within supply networks, leading to price increases, shortages, or delays that impact both suppliers and consumers. The COVID-19 pandemic provides a stark illustration of these impacts. It hindered worker advancement, the financial growth of food production companies, and the adoption of food trading technology. Processing disruptions can lead to imbalances in fresh food markets, with producers facing overproduction and consumers experiencing shortages. For instance, early in the pandemic, a sudden surge in consumer demand left store shelves bare due to mismatched supply and demand. Supply chain risks exist in various forms, with Carissimi et al. (2023) distinguishing between operational and disruption risks. These risks are often associated with both the demand side (linked to downstream operations) and the supply side (related to procurement and supplier relationships). The COVID-19 pandemic dramatically highlighted these risks, severely testing grocery supply chains and forcing grocery merchants to quickly adapt as they faced unexpected shocks to both supply and demand (Saarinen et al., 2020). However, the COVID-19 pandemic heightened the popularity and viability of online grocery shopping services, and prompted significant shifts in freight and supply chain management (Perboli & Rosano, 2019; Shen et al., 2022).

Government regulations also influence supply chain operations and consequently the consumers. Wang & He (2023) state that governments can influence supply chains through regulatory measures designed to address various societal concerns, such as environmental sustainability. By implementing regulations to monitor companies' recycling practices for end-of-life products, governments directly impact supply chain operations. Through the introduction of financial

responsibility-sharing mechanisms like penalty policies, governments can incentivize firms to prioritize recycling efforts, thereby altering production and waste management practices within supply chains. For instance, penalty policies may drive firms to recycle more and cut new product manufacturing to reduce waste disposal costs, but high penalties could harm supply chain efficiency despite higher recycling rates. Chen et al. (2019) also argues that to incentivize supply chain innovation, governments can offer per-unit production subsidies and/or investment subsidies for innovation. A recent example of government interventions such as tariffs, quotas, or subsidies, was during the course of Covid-19 where food supply chains faced significant stress and breakdowns in various sectors (Zwanka, 2022). A way to direct this process is research as research findings on consumers' online grocery shopping preferences and behavior are valuable for policymakers, aiding in the formulation of industry policies, development of e-commerce regulations, and enhancement of the e-commerce administration system. This enables the creation of a favorable online grocery shopping environment for both consumers and e-vendors, especially in the context of the growing e-commerce sector with the inclusion of grocery stores on various platforms (Zheng et al., 2020).

Table 1, summarizes service provision which is based on the four-part adapted principle:

Principle	Source	Description
Providing Consumers with Convenience	Wang et al. (2021); Magalhães (2021); Kämäräinen (2003); Simoni et al. (2020); Chopra (2003); Morganosky & Cude (2000); Boyer et al. (2005); Duarte et al. (2018); Farida & Kin (2016); Olsson et al. (2021); Cebollada et al. (2019); Taylor (2006)	Convenience involves efficient delivery options (direct, indirect), reducing wait times, and offering personalized, easy payment methods. Consumers' modern lifestyle and limited time drive online shopping for its time-saving benefits.
Allowing Customization	Magalhães (2021); Boyer & Hult (2005); Bellini (2015); Zhang & Song (2016); Lysa et al. (2022); Michlowicz (2021)	Customization is tailored to individual preferences and buying habits, impacting supply chain operations. Providing multiple delivery time slots and personalized service caters to diverse customer needs, ensuring flexibility and adaptability.

Ensuring Quality	Boyer & Hult (2005); Magalhães (2021); Zhang & Song (2016); Bowersox et al. (2020); Lysa et al. (2022); Carissimi et al. (2023); Agigi et al. (2016); Oke & Mohan (2009); Taylor (2006)	Quality involves maintaining high service standards, efficient IT integration, last-mile delivery optimization, and reducing supply chain errors. Ensuring timely delivery, product quality, and minimizing stock issues are key components.
Enhancing Overall Shopping Experience	Olsson et al. (2021); Duarte et al. (2018); Lee (2002); Olsson et al. (2021); Zheng et al. (2012); Saarinen et al. (2020); Perboli & Rosano (2019); Shen et al. (2022); Wang & He (2023); Zwanka (2022); Chen et al. (2019)	Enhancing the shopping experience includes holistic service provision, integrating operational efficiency with consumer-centric strategies. Addressing risks and disruptions, regulatory influences, and leveraging technology for a seamless shopping experience.

Table 1. Service provision in grocery supply chain in literature

3. Methodology

This chapter mainly discusses the methods used in the study, then explains the data collection methods and how the data is processed. Thereafter, data analysis methods of the study will be determined and explained. Finally, research limitations and ethical concerns will conclude this section.

3.1. Research Method

The selection of methodology and methods is intricately linked to the chosen paradigm. In research, a paradigm serves as more than just a philosophical framework; it guides the entire research process (Collis & Hussey, 2021). According to Morgan (1979), a paradigm operates on three levels: philosophical, social, and technical. At its core, a paradigm reflects fundamental beliefs about the world and provides guidelines for conducting research endeavors (Collis & Hussey, 2021). In the realm of social sciences, two main paradigms prevail: positivism and interpretivism or phenomenology or naturalism or non-positivism (e.g. Collis & Hussey, 2021; Mangan et al., 2004; Näslund, 2002). Positivism emphasizes the objective, measurable aspects of reality, aiming for generalizable findings through structured, quantitative methods. On the other hand, interpretivism delves into subjective experiences, prioritizing qualitative data collection to capture the richness and complexity of human phenomena, often using small samples and naturalistic settings (Collis & Hussey, 2021). In a simplified perspective, qualitative researchers are often characterized as subjective, while quantitative researchers, following a positivist approach, are deemed objective (Näslund, 2002).

Logistics research, primarily adopts a quantitative approach, aligned with a positivist perspective, yet there's a growing advocacy for integrating qualitative methodologies into this domain (Näslund, 2002). He also underscores the dynamic nature of logistics, which poses challenges for qualitative research due to the demanding attention required in addressing state-of-the-art logistical issues. Moreover, quantitative research, while advantageous in presenting results numerically and facilitating the gathering of large datasets (Ellram, 1996), may reflect past occurrences rather than predicting future challenges in the constantly evolving logistics landscape (Arndt, 1985; Näslund, 2002). Furthermore, the traditional emphasis on quantitative research can lead to reductionism, detachment from practical realities, and perpetuation of narrow research areas, potentially hindering innovation and progress in the field (Alvesson & Sköldberg, 2008; Monieson, 1981). By opting for interpretivist methods, researchers can overcome these limitations and offer a more nuanced understanding of human behavior and social interactions. In case of adopting an interpretivist stance, researchers would opt for qualitative approaches where researchers can generate theories, produce rich data, and ensure high validity, although with lower reliability (Collis & Hussey, 2021).

Scholars like Näslund (2002) argue that qualitative researchers aim to understand actors' perspectives more intimately through detailed interviewing and observation. Interviews, as cultural and collective phenomena, involve complexities in interpreting answers within local and broader discursive systems (Potter & Wetherell, 1987; Talja, 1999). Interviews, according to (Silverman, 2015), provide insights into moral realities, offering rich data on how individuals account for both their challenges and successes. Positivists tend to claim they have discovered the objective facts or definitive truths when presenting their research findings, while qualitative researchers utilizing methods such as interviews, recognize the subjectivity in their findings, presenting them as insights and perspectives (Rowley, 2012).

This study aims to conduct qualitative research through the lens of interpretivism paradigm, to delve into the subjective experiences and perceptions of main stakeholders within the grocery supply chain. By adopting an interpretivist approach, the research seeks to capture the richness and complexity of human phenomena, offering insights into the factors influencing the demand for services in the grocery supply chain amidst the evolving landscape of e-commerce and changing consumer behaviors. This approach fills a gap in the current research landscape, as qualitative investigations in this area are relatively scarce. By pioneering qualitative inquiry within the context of the grocery supply chain, this research adds value to the logistics and supply chain field, providing practical insights that can inform decision-making and strategic planning for practitioners in the industry.

3.2. Data collection and handling

Data, whether primary or secondary, plays a crucial role in research across various disciplines, particularly in the social sciences. While primary data originates from original sources, secondary data comes from existing ones (Collis & Hussey, 2021). Secondary data consists of pre-existing data gathered for purposes unrelated to the current research (Calantone & Vickery, 2010). Most positivist research in contemporary social sciences leans heavily on secondary data due to its accessibility and abundance. Researchers employ various approaches to gather information from sources such as publications, databases, and other records, which can exist in both physical and digital formats (Collis & Hussey, 2021). Such data are typically derived from pre-existing databases or public reports, including those mandated by government regulations. Secondary data sources encompass surveys conducted by other researchers, literature-published survey results, and maintained archives by various entities (Calantone & Vickery, 2010).

While primary data offer reliability due to known sources and collection methods, secondary data present distinct advantages. Firstly, they are more widely accessible, facilitating replication and validation studies. Secondly, data sourced from archives may exhibit greater objectivity, devoid of respondent biases. Additionally, secondary data enable researchers to explore diverse questions beyond original research intentions, enhancing research credibility. Despite these benefits, secondary data research demands fewer resources in terms of time, money, and personnel (Calantone & Vickery, 2010).

In this study, authors have used secondary data, which are transcripts of interviews by different groups of students and was conducted as part of a supply chain management course at the University of Gothenburg in 2022. These interviews aimed to gather insights into changes in online grocery shopping behavior before, during, and after the COVID-19 pandemic. Participants were engaged in open-ended conversations, allowing them to share their experiences freely. These participants were chosen randomly from Swedish people, from different ages and gender groups. The interviews were transcribed verbatim from written reports provided. These transcripts formed the dataset for analysis. While handling the data, we found out that 167 interviews were conducted in total given in 12 documents, however, after careful considerations and setting certain conditions on quality and structure of interviews, we ended up with 88 interviews given in 6 documents. These certain conditions were considerations such as the most number of questions asked, same questions asked, paying no attention to the age or gender of the participants to ensure randomness. Some interviews had different wordings for asking the questions or selectively chose to ask some predefined questions which were provided to them at first, so they got filtered out. With this we tried to ensure we have a unified data to analyze, ensuring reliability of it.

Afterwards, to be able to have them all together, as the data were in multiple docx documents, we ended up employing Python to automate this cumbersome task. To be able to do this we

needed to clean the data beforehand so the program can understand the data and we as programmers can write a code that works correctly and grab everything correctly and give us correct output. Therefore, we created a new docx file out of the old one for each document and then connected them all together to be able to do the analysis on one single document later and see the questions and answers at one place as a whole. During this process we set unified names for questions, exemplified by: “Q20: Were there any factors that remained constant in your decision to shop online for groceries across all three phases?” and unified coded names for answers, exemplified by: “A11Q20-R11-GR1: Before, during and after the pandemic, have there been any factors that remained constant in my decision to shop online for groceries? The convenience, and prices (deals).”. As can be seen in the example of the answer, decoding the naming will be like: A11 as 11th answer to the question, Q20 as question 20, R11 as respondent 11, and GR1 as group 1. This was done because we were handling multiple documents and we wanted to be able to get back and check the document and make sure the data returns the correct result after running the codes in Python. It is worth to mention that one other consideration was as can be seen in the provided example of answer, the question is also paraphrased to the answer, so that when later being analyzed manually or using software, it can be understood what the context was, making it clearer for interpretations. Later, in the finding sections, the answers are just mentioned in “A4Q20”-alike format to keep it simple and easier to follow for the reader.

3.3. Data analysis

Qualitative research encompasses more than just the utilization of interview data; it involves the perception of qualitative data, the theoretical frameworks guiding analyses, and the data analysis processes (Gammelgaard & Flint, 2012). Qualitative analysis entails more than simply counting answers; researchers select sections of discourse deemed significant and analyze patterns of consistency and variation (Potter & Mulkay, 1985; Talja, 1999). Qualitative interview analysis involves factist and specimen perspectives: the former focuses on participants' actual behavior or attitudes, while the latter examines participants' expressions as linguistic constructs, highlighting the importance of the researcher's interpretations for validity and reliability (Alasuutari, 1995; Talja, 1999).

Qualitative Data Analysis Software (QDAS), exemplified by programs like NVivo and ATLAS.ti, offers significant utility in managing extensive qualitative data or material from mixed methods research. While the software does not perform analysis and interpretation itself, it serves as a repository for data storage and aids in structuring, coding, and summarizing data (Collis & Hussey, 2021). As per Collis & Hussey (2021), the advantages of QDAS are manifold: it facilitates effortless importation, storage, and retrieval of large qualitative datasets, alleviating researchers from manual tasks like coding and relationship-building within the data, thereby allowing more time for analysis and discovery. Moreover, it promotes systematic work and enhances the validity and auditability of findings. Similarly, Hwang (2008) argues that the use of such software enhances the transparency and replicability of processes, eventually enhancing its

credibility. Secondly, QDAS aids in saving time and improving project management efficiency, especially within collaborative environments. While the software doesn't replace intellectual work, it serves as a research assistant, streamlining tasks and enhancing outcomes.

Woods et al. (2016) conducted a study indicating a rising trend in the use of QDAS in academic articles. Researchers utilize these tools across diverse research designs, primarily for analyzing data gathered from interviews, focus groups, documents, field notes, and open-ended surveys. While QDAS can support multiple research phases, most researchers employ it for data management and analysis rather than data collection or visualization. The study highlights various types of research studies supported by QDAS, including generic qualitative studies, interviews, focus groups, grounded theory, thematic analysis, ethnography, among others. Additionally, the analysis reveals a predominant use of ATLAS.ti and NVivo, particularly in coding and retrieving data, distinguishing coded data by participant characteristics, and exploring conceptual relationships.

Rowley (2012) suggests to conduct data analysis effectively, the first step is to organize the dataset, whether it's entering transcripts into a database or using qualitative analysis software. Becoming familiar with the data is crucial; researchers should thoroughly read and annotate the text, noting key themes or observations. This process helps in considering how to report findings and identifying important themes. Next, the data is classified, coded, and interpreted to impose structure. Themes, whether emerging from the data or based on prior theory, are crystallized, with the main themes forming the basis of the narrative. It's essential to keep the number of main themes manageable, ideally between six to eight, with potential for sub-themes. Text is then coded using these themes, allowing for comparison and understanding of interviewees' perspectives. Interpretation is key, involving making sense of the data and surfacing meaning. To mitigate bias, it's advisable to have another researcher check the classification and coding. Additionally, researchers should reflect on their own assumptions and biases.

In this study, the data analysis was conducted using ATLAS.ti as the chosen QDAS for analyzing the qualitative data collected from interviews. After handling data and bringing all the analyzable data in one document, we uploaded it into the software. Then we tried to become thoroughly familiar with the data through structured reading, annotation in the software, and discussions of authors. After this step, the authors first ran the so-called “intentional coding” feature of software, with multiple iterations. Using this the data was analyzed through integration of ATLAS.ti with OpenAI, and it gave us multiple codes. Through the iterations with different definitions of problems for the software to give us the best answer, we got a long list of code from the software which were then transferred to an Excel file in order to categorize them manually. After classifying, and interpreting the data and discussions between the authors, we came up with a few main codes and their respective subcodes, ensuring consistency and rigor in our analysis process. The main codes were chosen as the main themes and the subcodes were

only considered as a checkup point to see which codes were assigned to answers. By maintaining a manageable number of main themes, we aimed to capture the essence of participants' perspectives. Throughout the analysis, we remained mindful of potential biases, engaging in reflection and seeking intercoder reliability checks to enhance the validity and credibility of our findings.

3.4. Research Limitations

Concerning the adopted paradigm, an interpretivist approach despite offering multiple merits, presents certain limitations. One significant constraint is the potential lack of generalizability inherent in qualitative research. Since interpretivists prioritize depth over breadth, findings may not be easily transferable to different contexts or populations. Additionally, the subjective nature of qualitative data collection poses challenges in ensuring consistency and reliability across studies. Moreover, interpretivist methodologies require extensive time and resources for data collection and analysis. The emphasis on qualitative data often results in voluminous datasets that necessitate rigorous and time-consuming interpretation. This can pose practical challenges, particularly in research settings with limited resources or tight deadlines. Furthermore, while interpretivism offers valuable insights into human experiences, it may struggle to address certain research questions that require objective, quantitative measurements (Collis & Hussey, 2021).

Concerning the chosen method, as per Collis & Hussey (2021), qualitative data analysis lacks a universal consensus, unlike quantitative data which typically undergoes statistical analysis according to established conventions. Compounding this challenge is the integration of data collection methods with analysis techniques, blurring the distinction between them. Moreover, in some published studies, the process by which researchers organize and synthesize large qualitative datasets into findings remains unclear, inviting criticism regarding representativeness and generality. Scholars have also noted deficiencies of a qualitative study such as the proper representation issues (Bryman, 2003) and the absence of guidance on qualitative data analysis methods (Morse, 1994).

Concerning utilizing secondary data, despite its advantages, the utilization of it requires careful scrutiny. Researchers must assess the suitability of the data for their specific research goals, considering factors such as sampling mechanisms, data collection methods, and potential biases. This critical evaluation is essential to ensure the integrity and reliability of the research findings. Moreover, the lack of suitable secondary data may necessitate researchers to refine their hypotheses or research models accordingly (Calantone & Vickery, 2010). It's essential to recognize that secondary data are inherently shaped by their original context and audience. When analyzing secondary data, researchers must be mindful that the material was created for different purposes and audiences, which can influence its content and language. Therefore, a nuanced understanding of the source's background is crucial for accurate interpretation and meaningful analysis (Collis & Hussey, 2021).

Concerning using QDAS for data analysis, (Walker, 1993) underscores the importance of aligning the chosen QDAS with the research methods employed, according to John & Johnson (2000). Also, concerns have been raised regarding the potential focus on quantity over meaning, which may arise due to the pressure to gather large amounts of data (John & Johnson, 2000; Seidel, 1991). Additionally, the structured nature of QDAS may homogenize qualitative data analysis approaches, leading researchers to favor coding and retrieval methods (Agar, 1991; John & Johnson, 2000). Furthermore, the privilege of coding may distance researchers from the data, resulting in a loss of context and richness (John & Johnson, 2000; Tallerico, 1992). Moreover, the inappropriate use or reliance on QDAS may distract researchers from engaging deeply with the data and could become a time-consuming endeavor (John & Johnson, 2000; Seidel, 1991).

Therefore, the methodology applied in this research can have some limitations. Firstly, the utilization of secondary data, specifically transcripts of interviews conducted as part of a supply chain management course at the University of Gothenburg in 2022, may introduce potential biases or limitations inherent in the original study's design or data collection process. While secondary data offer accessibility and richness, they may not fully align with the specific research questions or objectives of the current study. Moreover, since the interviews were conducted within a specific context and timeframe, generalizing findings beyond this context might pose challenges, particularly in capturing the complexities of online grocery shopping behavior across diverse populations or in different socio-economic settings.

Furthermore, the reliance on qualitative data analysis software such as ATLAS.ti for data analysis introduces its own set of limitations. While such software aids in organizing and managing large datasets, it may inadvertently influence the interpretation process or distance researchers from the raw data, potentially leading to oversimplified or mechanistic analysis. Additionally, despite efforts to ensure reliability and validity through intercoder reliability checks and consensus discussions, the subjectivity inherent in qualitative analysis may still pose challenges in achieving consistency and rigor. These limitations underscore the need for the researchers to acknowledge the potential constraints of their chosen methodology and employ complementary approaches or strategies to mitigate these limitations and enhance the robustness of their findings.

3.5. Research Ethics

In conducting research, adherence to professional standards and ethical regulations is imperative (Collis & Hussey, 2021). Good research practices, as outlined by ALLEA (2023), are fundamental for upholding research integrity. These practices serve as guiding principles for individuals, institutions, and organizations, navigating the practical, ethical, and intellectual challenges inherent in research. Among these principles, reliability ensures quality in research design, methodology, analysis, and resource use. Honesty promotes transparency, fairness, and

impartiality in all research activities. Respect involves acknowledging and valuing colleagues, participants, society, and the environment. Accountability entails taking responsibility for the entire research process and its societal impact.

Addressing research misconduct, traditionally categorized as fabrication, falsification, or plagiarism (FFP), is essential, as defined by ALLEA (2023). Fabrication involves creating false data or results and presenting them as genuine, while falsification entails manipulating research materials or data without justification. Plagiarism, on the other hand, involves using others' work or ideas without proper attribution. Addressing these issues is crucial for maintaining the integrity and credibility of research findings.

Concerns about the secondary use of data, as per (TRIPATHY, 2013), revolve around potential harm to individual subjects and issues of consent and ownership. Adequate measures must be taken to ensure proper acknowledgment of the original data's ownership and to obtain explicit permission for its use in subsequent research endeavors. Moreover, considerations such as data adequacy, relevance, and ethical guidelines for data protection and anonymization are essential for responsible secondary data analysis.

Furthermore, ethical dilemmas, including anonymity, confidentiality, informed consent, and dignity, must be carefully addressed to safeguard the rights and well-being of research participants (Collis & Hussey, 2021). Ensuring the anonymity and confidentiality of participants, particularly in qualitative research involving vulnerable groups, requires meticulous attention to privacy measures throughout the research process (Arifin, 2018). Collaboration with supervisors and adherence to institutional codes of research ethics are essential steps in navigating ethical considerations and ensuring compliance with ethical standards (Collis & Hussey, 2021).

Collis & Hussey (2021) adds that while ethical principles provide overarching guidelines for research conduct, the establishment of specific ethical codes tailored to different research domains is debated. Nonetheless, researchers bear the responsibility of adhering to scientific principles, protecting participants' well-being, assessing risks, and obtaining necessary permissions throughout their research endeavors. Ultimately, upholding ethical standards is crucial for maintaining the integrity, credibility, and societal impact of research outcomes.

In conducting this study, adherence to professional standards and ethical regulations was essential. Following the research code of conduct at the University of Gothenburg, the study ensured the ethical use and analysis of secondary data. A close collaboration with the supervisor was maintained to ensure compliance with ethical standards, particularly in maintaining the anonymity and confidentiality of interviewees. This involved implementing privacy measures throughout the research process, aligning with ethical guidelines outlined in the university's

research code of conduct. By following these procedures, the study aimed to uphold the integrity, credibility, and ethical standards of its research outcomes.

4. Findings

In this chapter, findings of the research will be given to be later discussed. The results collected from 88 respondents are grouped into five main themes: 1) Shopping Dynamics, 2) Consumer Concerns, 3) Convenience and Efficiency, 4) Incentives or Deterrents, and 5) Delivery Service.

4.1. Shopping Dynamics

Before the pandemic, among the respondents who answered if they used online-grocery services, 68.1% had used online grocery shopping at least once, but only 21.6% used it frequently. During the pandemic, 74.7% stated they used online grocery shopping more often, while 40% of this proportion experienced only a bit of increase. After the pandemic and compared to pandemic, 44.3% reported getting back to their pre-pandemic shopping habits, 13.6% decreased their online shopping, and 29.5% of respondents kept with their online shopping habits. Among all three periods, only 12.5% kept their online grocery shopping habits unchanged and bought nothing online. Overall, as shown in Figure 1, our data indicates a notable decrease in the percentage of individuals who did not shop for groceries online, dropping from 78.4% to 55.7%. Interestingly, among those who purchased groceries online, the proportion experiencing no change remained consistent at 21%. However, a distinct segment of consumers, comprising 22.7% of the total, have begun to shop for groceries online more frequently than before the pandemic, though not as frequently as during the pandemic, suggesting a developing habit among this group.

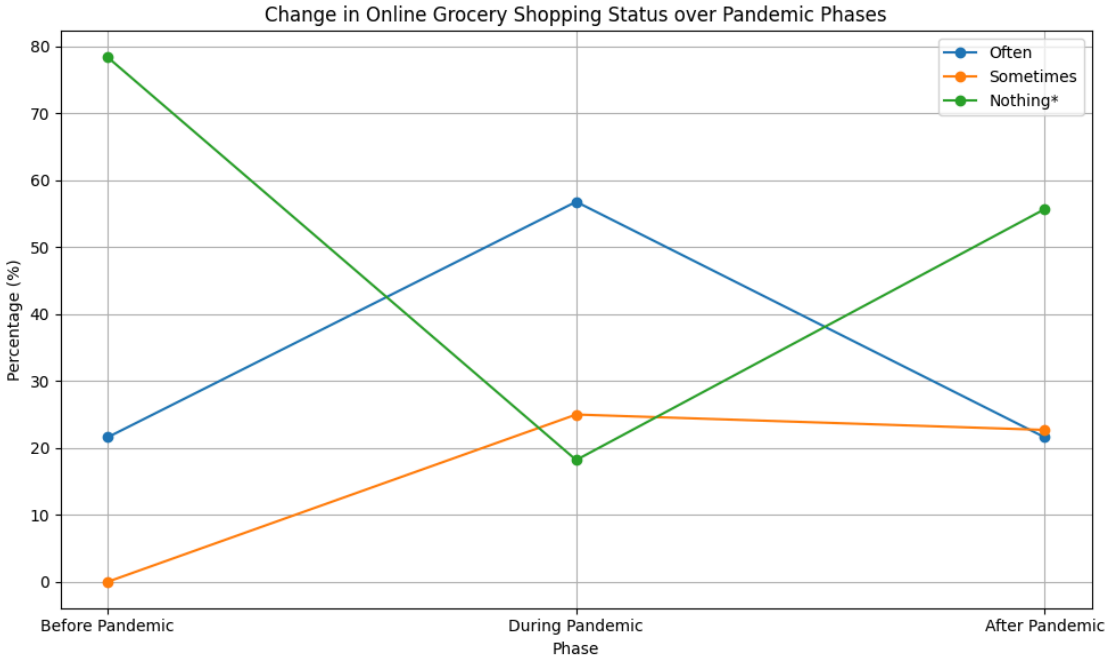

Figure 1. Change in Online Grocery Shopping Status over Periods
(Nothing*: Nothing includes consumers who do not buy online at all or only tried it a few times)

A notable theme regarding a shift in online shopping behavior observed. Participants' experiences suggest a discernible movement either toward or away from online shopping platforms. Before the pandemic, many interviewees expressed limited use of online grocery shopping, citing infrequent usage or a complete lack thereof. However, as the pandemic necessitated adjustments to daily routines and behaviors, individuals began to embrace online grocery shopping. Many interviewees expressed a significant shift in their shopping behavior, particularly during the height of the pandemic. From initial reluctance or unfamiliarity with online platforms to embracing them as a necessity for safety, individuals navigated changing circumstances and formed new understandings and habits towards online grocery shopping.

> *"[Before, during and after the pandemic, how I compare and contrast my experiences and attitudes towards online grocery shopping?] Before I only bought food, but when the pandemic came I started buying everything online because I was afraid of getting COVID because I have asthma. Afterwards, I continued to shop online. I think it just became a habit."* (Respondent A34Q18)

> *"Before the pandemic, I would perhaps not order groceries online because I prefer choosing specific items which are visually appealing. During the pandemic, orders were made out of necessity and the advantage of being safe from exposure. After the pandemic, the convenience & timesaving of ordering online has led me to continue ordering groceries online, even though there's no risk to doing so myself anymore."* (Respondent A9Q18)

> *"I definitely think online grocery shopping will continue to be a part of my routine, but not as extensively as during the pandemic. It offers a valuable option for convenience"* (Respondent A54Q17)

> *"There has been a total change in my [online grocery] shopping habits. Prior to the pandemic, I wasn't a frequent user of online grocery shopping, but now I conduct almost all my shopping online."* (Respondent A56Q18)

Some respondents indicated a decrease in their reliance on online shopping, opting instead for traditional in-store purchases. This shift was evident as individuals resumed their pre-pandemic routines, returning to familiar shopping patterns and reducing their online shopping frequency. Some returned completely back to buying groceries in-store and some reported occasional online grocery shopping post-covid.

> *"After the pandemic subsided, my choice went back to buying stuff offline"* (Respondent A83Q12)

"I would say that my attitude and experience before covid was vague and then COVID-19 hit and my attitude became better because it helped me to get my groceries but then after the pandemic my attitude did not directly change but I do not see the need to use it in the same amount any more." (Respondent A43Q18)

"Before I just bought a few times a year for myself. During the pandemic I started to buy for my old grandfather. I really liked it since I didn't have to go to the store for him. ... After the pandemic I only ordered sometimes for him, since he likes to go outside. And when it comes to myself I go to the physical store." (Respondent A29Q18)

4.2. Consumer Concerns

Throughout the interviews, participants emphasized the significant role that safety and health concerns played in their decision-making process regarding grocery shopping during the COVID-19 pandemic. Many cited the need to minimize exposure to crowded places and adhere to public health guidelines as primary reasons for transitioning to online grocery shopping.

"[During the pandemic, did concerns about safety and health play a role in my decision to shop online?] Yes, I didn't want to spread covid or to get it myself." (Respondent A82Q9)

Participants also expressed a strong desire to protect themselves and their loved ones from potential infection, with safety and health considerations outweighing other factors to buy their groceries online.

"[During the pandemic, what were the main factors that influenced my decision to shop for groceries online?]The main factor was my concern for mine and my family's health and safety" (Respondent A10Q8)

However, participants got back to their pre-pandemic shopping behaviors, with some opting to buy groceries in-store when pandemic risks started to decrease. This decision was driven primarily by the disappearance of health risks and the need for precautions.

"[During the pandemic, have my online grocery shopping habits and frequency changed since the COVID-19 pandemic started to subside?] A long time after the pandemic subsided, I began visiting the stores again. Otherwise, if you ask me, I still preferred to shop online to mitigate the health and exposure risks." (Respondent A12Q12)

"[During the pandemic, were there any government regulations or recommendations that affected my grocery shopping choices?] No, my own safety concerns were the main reason." (Respondent A55Q10)

4.3. Convenience & Efficiency

In exploring the factors influencing individuals' decisions regarding online versus in-store grocery shopping, a prominent theme emerged: convenience and efficiency. Participants consistently highlighted the allure of online grocery shopping for its time-saving benefits. Many emphasized the convenience of being able to browse and purchase items from the comfort of their own homes. This sentiment was echoed by others who appreciated the ease with which online platforms facilitated shopping tasks like meal planning, allowing for more efficient use of their time.

> *"[After the pandemic, will online grocery shopping continue to be a significant part of my shopping routine?] Yes, I do believe I'll continue using it since it's very convenient and time-sufficient for me and my family. The online shopping might reduce when the kids move out but that won't be for a while"* (Respondent A60Q17)

> *"Before the pandemic, I would perhaps not order groceries online because I prefer choosing specific items which are visually appealing. During the pandemic, orders were made out of necessity and the advantage of being safe from exposure. After the pandemic, the convenience & timesaving of ordering online has led me to continue ordering groceries online, even though there's no risk to doing so myself anymore"* (Respondent A9Q18)

> *"Ordering online has helped me eat healthier because there are sites that provide recipes and you can add the items automatically to your basket by pressing a button"* (Respondent A51Q20)

> *"I like ordering online due to the fact that I can order any time of the day and choose a pick-up time."* (Respondent A51Q15)

However, while online shopping offered convenience, some participants also expressed reservations or limitations. Also, some participants expressed concerns about the quality and freshness of items, as well as the inability to personally select products.

> *"Before the pandemic it felt lazy and sort of unnecessary since I have a car and live quite close to the store. During the pandemic it was amazing to be able to help my mom with shopping to keep her safe. Now, I do not have the same need for the service and I'm back to seeing it as something lazy."* (Respondent A61Q18)

> *"While I appreciated the convenience and safety measures implemented during the pandemic, the quality of the food did not meet my expectations consistently across all periods"* (Respondent A50Q16)

In addition, perceptions and prefrences of in-person grocery shopping often revolved around the sensory experience and the ability to personally inspect items. Participants valued the opportunity to see, touch, and smell the products before purchasing. Furthermore, perceptions of in-person shopping also included social aspects, such as interacting with store staff and fellow shoppers. Some participants viewed grocery shopping as a communal activity or a way to engage with the local community.

> *"It's more enjoyable to go to the store, so you can choose the ingredients yourself"* (Respondent A75Q17)

> *"After the pandemic, it feels nice to have the spontaneity of choosing groceries in the store and not having to plan too much"* (Respondent A46Q18)

> *"I think the concept of online shipping is not for me really. I care too much about my usual habit of going to the store, getting inspired, feeling and squeezing the products, meeting people, and things like that. I will most likely continue to value that concept more."* (Respondent A69Q16)

I think the concept of online shipping is not for me really. I care too much about my usual habit of going to the store, getting inspired, feeling and squeezing the products, meeting people, and things like that. I will most likely continue to value that concept more.

Also, in-store shopping was perceived by some interviewees as offering greater variety and flexibility in product selection.

> *"There is a wider variety of products if I shop in-store because I can visit more stores with slightly different products. I'm not limited to one store's inventory, which happens when shopping online"* (Respondent A45Q15)

Nevertheless, despite the appeal of in-store shopping, time constraints and practical considerations often dictated individuals' preferences. Some participants acknowledged that while they enjoyed the in-store experience, they opted for online shopping due to its time-saving advantages.

> *"[After the pandemic, will online grocery shopping continue to be a significant part of my shopping routine?] It depends on the time constraints, it may be more frequent during some days where I don't have enough time to go to the stores"* (Respondent A81Q17)

4.4. Incentives or deterrents

Interviews' analysis revealed diverse perspectives on the influence of service incentives or deterrents on the utilization of online and in-store grocery shopping. Many interviewees

highlighted the significant impact of promotional offers and discounts provided by online grocery retailers during the pandemic. Many also mentioned free deliveries as one of the main incentives offered by grocery stores.

> *"Yes, there were many campaigns and promotions, and it made me more willing to order everything online"* (Respondent A50Q11)

> *"I order almost everything online due to the convenience, the discounts, and since I believe it is easier to plan my meals when I order online"* (Respondent A52Q14)

> "*Yes, I saw many discounts online and it was evident that the shops wanted more customers to order online*" (Respondent A49Q11)

> "[*During the pandemic, were there any government regulations or recommendations that affected my grocery shopping choices?] Yes, Things like free delivery and discounts on bulk purchases made online shopping more attractive…*" (Respondent A49Q10)

Conversely, some interviewees expressed concerns about the limitations and drawbacks of online grocery services like concerns about the quality of products and the inability to choose specific, which acted as deterrents to their utilization.

> *"When buying groceries online, you can't choose exactly what you like."* (Respondent A85Q15)

Moreover, some interviewees expressed reservations about the effectiveness or even existence of service incentives in encouraging online grocery shopping. Some also mentioned that even if there were any incentives, they stopped after the pandemic.

> *"[During the pandemic, were there any incentives or promotions from online grocery retailers that influenced my shopping behavior?] Nothing special. Just the common point system that the supermarkets have anyway."* (Respondent A85Q11)

> *"[During the pandemic, were there any incentives or promotions from online grocery retailers that influenced my shopping behavior?] No, not directly. You could get an offer for free delivery, which might have made me choose one company over another, but not more than that."* (Respondent A47Q11)

> *"[Comparing after and during the pandemic, am I shopping for groceries online as frequent?] Not that frequent anymore because the incentives have been removed; it's more expensive now."* (Respondent A3Q13)

In addition, respondents noted that price differentials between online and local stores played a crucial role in shaping their grocery shopping habits. Despite the convenience of online

shopping, the affordability of groceries in local stores often outweighed the advantages of online platforms. This sentiment was echoed by multiple participants who emphasized the cost-effectiveness of shopping in physical stores compared to online alternatives.

> *"One problem right now is that it's more expensive to buy online than in-store, so during inflation when people have it less economically stable they may buy less online"* (Respondent A77Q17)

> *"[After the pandemic, what factors have influenced my online grocery shopping behavior?] Prices mainly. It's cheaper in local stores as opposed to online hence me being more frequent with going to the stores"* (Respondent A67Q14)

> *"It's cheaper in local stores as opposed to online hence me being more frequent with going to the stores"* (Respondent A67Q14)

> *"After the sign-up deals faded out, I realized that it is actually quite a bit more expensive than I originally experienced with the coupons"* (Respondent A28Q11)

4.5. Delivery Service

Participants highlighted the convenience and accessibility of home delivery services, which allowed them to receive groceries directly at their doorstep without the need to venture into crowded stores. One interviewee expressed appreciation for the ease of ordering large quantities without the constraint of transportation. This sentiment was echoed by others who valued the practicality and time-saving aspect of home delivery options.

> *"Delivery service made it easier for me to order large quantities since I don't have a car, and I live in the city so it is an easy way to get it delivered to the door"* (Respondent A37Q8)

> *"[During the pandemic, how did my online grocery shopping habits change in the first days?] I started making frequent use of the convenience of purchasing, browsing, and doorstep delivery, and I enjoyed experimenting with the various features and services that various online platforms had to offer."* (Respondent A57Q4)

Additionally, some participants noted using click and collect services. This service allowed customers to order groceries online and then pick them up at designated locations or store lockers at their convenience. Some respondents appreciated the flexibility and control offered by click and collect options, as it allowed them to schedule pickups according to their own availability.

> *"I only shopped online at Willys using their pickup system, where I created my own grocery list, and the Willys staff would then pick and pack my groceries for me"* (Respondent A26Q4)

In addition, some participants expressed overall satisfaction with the convenience and reliability of delivery services offered by grocery stores, emphasizing their preference for modes that best suited their needs.

> *"The delivery person helped me to carry my groceries inside the house"* (Respondent A87Q11)

> *"My experience towards online shopping is that no matter the period or the amount of products I ordered, I was always satisfied with the delivery of what I requested"* (Respondent A88Q18)

Despite the convenience of delivery services, some participants encountered challenges or limitations when utilizing online grocery shopping platforms. Issues such as difficulty in finding available delivery slots, delays in receiving orders, and occasional inaccuracies in fulfilling requests were reported by a few interviewees.

> *"It was difficult to get deliveries on time"* (Respondent A30Q7)

> *"During the pandemic, did I experience any challenges or difficulties in finding and ordering groceries online? Yes, the main issue was the slot times. You had to plan ahead in time, if not delivery times could suit me properly sometimes."* (Respondent A24Q7)

However, for some these challenges did not outweigh the perceived benefits of delivery services for many, as evidenced by the continued reliance on online shopping platforms.

> *"[After and before the pandemic, how satisfied are you with your online grocery shopping experiences?] I would've said it has been good, the only negative thing is that you have to find a time-slot for deliveries which you will have to adjust your schedule based on that factor. Otherwise it has been good."* (Respondent A81Q16)

> *"[During the pandemic, did I experience any challenges or difficulties in finding and ordering groceries online?] Not really, sometimes the delivery times were longer than usual, but that depended more on what day of the week."* (Respondent A61Q7)

In general, the delivery services were a main factor for some affecting their willingness, positively or negatively, to adopt online grocery shopping or even continue doing it after the pandemic.

> *"[During the pandemic, what were the main factors that influenced my decision to shop for groceries online?] ... and the convenience of home delivery were the main factors that influenced my decision."* (Respondent A54Q8)

"Well, the pandemic was rather restrictive to our movements, so online grocery shopping became quite appealing in terms of convenience and safety. After the pandemic, the value created in my mind about the convenience of delivery has stayed. The pandemic definitely changed my habits and made me a lot more eager to order groceries online." (Respondent A9Q20)

"[Comparing after and during the pandemic, am I shopping for groceries online as frequent?] No I am not buying as much as before and went back to buying stuff exactly like precovid. Due to costs like expensive delivery charges and inconvenience regarding timings." (Respondent A83Q13)

"some retailers encouraged to switch to online shopping, but they didn't have delivery that was reliable, so it was more like click and collect." (Respondent A16Q11)

A summary of the above discussed themes are given in Table 2.

Theme	Description
Shopping Dynamics	Consumer shopping habits throughout the COVID-19 pandemic have shown fluctuations, with shifts between online and in-person shopping observed.
Consumer concerns	The pivotal role of safety and health considerations in shaping participants' grocery shopping behaviors due to COVID-19 pandemic.
Convenience and Efficiency	Convenience and efficiency influence choices between online and in-store grocery shopping, with some prioritizing time-saving benefits and others valuing the sensory and social aspects of in-person shopping.
Incentives or Deterrents	There are mixed views on incentives and deterrents for online and in-store grocery shopping, including discounts and delivery perks versus concerns about product quality and pricing disparities.
Delivery Service	Home delivery and click-and-collect services were valued for their convenience, but challenges like finding delivery slots and delays affected satisfaction and post-pandemic shopping habits.

Table 2. Identified themes

5. Discussion

This chapter combines the literature review with the findings for an in-depth discussion to answer the research question.

Several key findings emerge from this study, shedding light on the multifaceted nature of service provision in the grocery supply chain, especially considering the inevitable role of a disruptive

phenomena such as COVID-19 pandemic. The initial findings of this study show a notable shift in online shopping behavior among consumers. Before the pandemic, many consumers expressed limited use of online grocery shopping, citing reasons such as preference for visually selecting items in-store. Our data shows 21.6% of individuals in Sweden were using online grocery shopping before the pandemic, which is similar to the Eurostat (2020) survey results indicating 21% share online grocery and food shopping observed in 2019. However, the pandemic acted as a catalyst and pushed individuals to adopt online grocery shopping out of necessity for safety, as was the case in Germany as per Dannenberg et al. (2020) and Olbrich (2023) research. This shift was observed across various age groups and demographic segments, indicating a widespread adoption of online shopping platforms during the pandemic. This brought an opportunity for players in the grocery supply chain to build on it and attract them by providing services that make them stay on their online shopping platforms.

Consumer experiences during the pandemic led to the formation of new habits and attitudes towards online grocery shopping. For some, online shopping became a habitual part of their routine, driven by the convenience and time-saving benefits it offered. Even after the pandemic, some consumers continued to rely on online shopping to some extent, although not as extensively as during the height of the pandemic, indicating a lasting impact on consumer behavior. This newly observed segment of online grocery users, comprising 22.7% of the total, opting to shop online “sometimes”, after the pandemic subsided. This is interesting, considering that existing literature indicates that the demographic situation observed in this study in Sweden contrasts with that of Germany, where online grocers struggled to capitalize on similar opportunities. Therefore, it may suggest that service provision during COVID-19 was persuasive or at least convincing enough that made some consumers stay on online platforms. However, as pandemic risks began to decrease, some participants reverted to their pre-pandemic shopping behaviors, opting to buy groceries in-store. This shift underscores the dynamic nature of consumer preferences and behaviors, which can fluctuate in response to changing circumstances and perceptions of risk or other phenomena. This finding underscores the need for retailers to offer flexible and adaptable service options that cater to diverse consumer preferences, which is suggested also by Boyer et al. (2005), Fornasiero et al. (2021), and Magalhães (2021).

One significant finding highlighted in the literature is the pivotal role of safety and health concerns in influencing consumers' decisions regarding grocery shopping during the pandemic. Participants in the study emphasized the importance of minimizing exposure to crowded places and adhering to public health guidelines, which led many to transition to online grocery shopping. Furthermore, some participants attributed their decision to shop online during the pandemic to personal safety concerns rather than merely government regulations or recommendations. This suggests that consumer motivations for adopting online grocery shopping and consequently the grocers’ service provision prospect were partly driven by individual risk perceptions and health considerations, and partly by external mandates. This

finding underscores the critical importance of addressing safety and health considerations in service provision, particularly during times of crisis such as the COVID-19 pandemic. This insight aligns with the research conducted by various scholars, including Olsson et al. (2021), who observed an increasing number of consumers opting for online grocery shopping in Sweden as a means to mitigate health risks and adhere to safety protocols. This also aligns with findings of Barman (2021) and Carissimi et al. (2023) which noted the influence of disruptions like pandemics on consumer behavior and consequently supply chain processes. However, one can say that the grocery service providers have taken care of consumers in this regard in their physical stores as well and could make a safe situation in physical stores, as we found no one complaining about the safety standards of grocers. This may suggest that service provision was convincing enough in physical stores and at the same time offered online shopping, showing adaptability.

While not the primary driver during the pandemic, the findings suggest that consumers value the convenience provided by online grocery platforms. In interviews, participants emphasized the convenience of online shopping, especially during the pandemic when safety concerns were paramount. Consumers appreciate the ability to browse and purchase items from the comfort of their homes, as it allows for more efficient use of their time. This supports the broader themes in the literature emphasizing convenience as a key element of modern grocery shopping expectations (e.g. Boyer & Hult, 2005; Duarte et al., 2018; Morganosky & Cude, 2000). The ability to order groceries anytime and select convenient pickup times were cited as significant advantages, echoing the literature's emphasis on convenience-driven shopping behaviors. This may suggest that some online service provision attributes like logistics were and are somewhat convenient as new consumers have kept buying their groceries online after the pandemic.

However, despite the convenience offered by online shopping, some interviewees expressed reservations about the quality and freshness of products, as well as the inability to personally select items. Therefore quality-wise there were rooms for improvements in service provision on online shopping channels. The quality issues underscores the importance for grocery supply chains to ensure quality control mechanisms are in place and well-communicated to consumers and potentially offer hybrid models that allow for inspection upon pick-up or delivery. Moreover, the concerns mentioned align with the literature's discussion on the limitations of online shopping, where consumers may perceive in-person shopping as offering greater sensory experiences and control over product selection. Additionally, the social aspect of in-store shopping, such as interacting with store staff and fellow shoppers, was highlighted in the interviews as a significant factor influencing preferences for in-person shopping experiences. This can suggest that grocers shouldn't entirely abandon the in-store experience, but rather seek innovative ways to integrate online and offline channels to cater to diverse preferences.

Another finding of this study is that incentives such as promotional offers, discounts, and free deliveries play a significant role in influencing consumer behavior towards online grocery shopping, particularly during the pandemic. In parallel with literature which underscore the importance of understanding logistical customers' preferences and providing convenient delivery options, respondents in the interviews explicitly mentioned the impact of promotional campaigns and discounts on their decision to order groceries online. These incentives not only attract customers but also contribute to enhancing the overall shopping experience, as noted by respondents who appreciated the convenience and ease of planning meals associated with online shopping. Conversely, concerns about product quality and the inability to choose specific items act as deterrents to the utilization of online grocery services. This reflects the findings of Boyer & Hult (2005), who emphasize the importance of efficient integration of IT, manufacturing, and marketing for successful online grocery delivery. Respondents expressed reservations about the limitations of online shopping, particularly regarding product selection, which may hinder adoption among certain consumer segments, which means the services were not convincing for some.Therefore, two of the supply chain extension strategies, meaning quality and customization, were not optimal concerning service provision of grocers, which may have led to attract possible customers.

Moreover, the presence or absence of service incentives directly impacts consumer behavior, as highlighted by respondents who noted changes in their shopping frequency following the removal of incentives post-pandemic. This echoes the literature's emphasis (e.g. Boyer & Hult, 2005; Cebollada et al., 2019; Zheng et al., 2012) on the role of incentives such as promotions and discounts, and value-added services such as personalized recommendations or meal planning tools in encouraging online grocery shopping, with consumers being more inclined to utilize online platforms when attractive offers are available. Price differentials between online and local stores, also emerge as a significant factor influencing consumers' grocery shopping habits. Despite the convenience of online shopping, affordability remains a key consideration for consumers, with many opting for local stores due to lower prices. This finding is consistent with the literature's discussion on consumer tolerance for supply chain errors and the need for retailers to tailor pricing and marketing strategies effectively, as mentioned by Zhang and Song (2016).

Regarding delivery, the convenience and accessibility of home delivery services emerged as significant factors influencing consumers' adoption of online grocery shopping. This sentiment is echoed in the literature, where the ease of ordering groceries online and having them delivered directly to the doorstep is highlighted as a key benefit. Participants appreciated the practicality and time-saving aspect of home delivery options, especially for those without access to transportation or living in urban areas where mobility may be limited. Additionally, click and collect services were mentioned by some participants as another preferred option for obtaining groceries online. This service combines the convenience of online ordering with the ability to pick up groceries at a designated time and location. The flexibility and control offered by click

and collect options were appreciated by participants, aligning with findings from the literature (e.g. Chopra, 2003). Participants mostly expressed satisfaction with the convenience and reliability of delivery services offered by grocery stores, emphasizing their preference for modes that best suited their needs. This positive perception of delivery services is consistent with the literature, which highlights the importance of efficient last-mile delivery in enhancing customer satisfaction and loyalty (e.g. Boyer et al., 2005; Magalhães, 2021).

However, despite the benefits of delivery services, some participants encountered challenges or limitations when utilizing online grocery shopping platforms. Issues such as difficulty in finding available delivery slots, delays in receiving orders, and occasional inaccuracies in fulfilling requests were reported by a few interviewees. These happened probably due to different reasons such as delays and bottlenecks in the supply chain, logistics congestion, insufficient warehousing, and product supply shortages caused by uncertainties for all actors in the supply chain, consumer demand surge, and hoarding behavior (e.g. Barman, 2021). These challenges highlight the importance of robust logistics systems, efficient order fulfillment processes, and constant communication with different actors in the supply chain which come to use in such conditions to ensure a seamless customer experience, as the operational uncertainties and disruptions can impact supply chain operations, leading to delays or discrepancies in delivery services (e.g. Carissimi et al., 2023; Barman, 2021, Magalhães, 2021).

Nevertheless, for many participants, these challenges did not outweigh the perceived benefits of delivery services, as evidenced by their continued reliance on online shopping platforms. The convenience and safety offered by home delivery during the pandemic, in particular, influenced consumers' decision-making regarding online grocery shopping, with many expressing a willingness to continue using these services even after the pandemic subsided. This can also be understood from previous research, which emphasizes the growing trend towards online grocery shopping and the importance of adapting supply chain operations to meet evolving consumer preferences.

It's crucial to acknowledge the limitations of this study's findings from interviews with Swedish grocery shoppers. Conducted as an exploratory study using a non-probability sample, caution is warranted when attempting to generalize the results to broader audiences. Additionally, Klarna’s (2023) report underscores the active involvement of all generations in Sweden in online grocery shopping, particularly highlighting near-equal participation between Gen Z and Gen X. While the decision not to limit interviewees based on specific demographics like gender or age appears advantageous, it's essential to recognize that the interviews were conducted in a major city such as Gothenburg, where online grocery shopping penetration is significantly higher compared to other areas (HUI Research, 2018). This could potentially introduce inaccuracies and hinder generalization as well.

6. Conclusion

This chapter summarizes the above discussion and concludes to answer the research question. In addition, the summary provides suggestions for supply chain managers to deal with possible public health issues in the future. Finally, future research directions are proposed.

This study provides insights into the complex relationship between consumer behavior and service provision in the grocery supply chain, particularly in the context of the COVID-19 pandemic. The findings highlight the significant impact of the pandemic on accelerating the adoption of online grocery shopping, driven primarily by necessity and safety concerns. While the initial surge in online shopping was unprecedented, the study reveals a nuanced picture of evolving consumer preferences and behaviors post-pandemic.

Before the pandemic, most people enjoyed buying groceries in-store as they prefered to inspect the products in person and socialize with other people while shopping. But the arrival of the pandemic changed consumers' grocery shopping habits. The pandemic acted as a catalyst for change and prompted the consumers to accept online shopping primarily for the sake of safety and some chose to buy groceries online. Therefore, even with the relaxation of pandemic-related restrictions, a noticeable proportion of consumers continued buying from online platforms, although mostly less extensively than during the pandemic's peak. But many consumers chose to return to buying from physical stores as they found no need to buy online where quality could have been compromised or the convenience factor was not that persuasive. Therefore, although more consumers have been using online shopping since the pandemic, it is still a minority. These all highlight the need for grocery retailers to provide flexible service options to meet consumer preferences and balance convenience with product quality and concerns about the in-store shopping experience. Safety and health considerations emerged as paramount factors influencing consumer decisions which emphasizes the critical importance of addressing these concerns in service provision. Additionally, incentives such as promotional offers and free deliveries played a significant role in influencing consumer behavior, highlighting the importance of value-added services in enhancing the overall shopping experience. Moreover, despite the challenges encountered, including supply chain disruptions and logistical constraints, consumers overwhelmingly expressed satisfaction with delivery services, underscoring the importance of efficient last-mile delivery in meeting customer expectations.

The findings in general suggest that Boyer et al. (2005) grocery supply chains extension strategies: providing consumers with convenience, allowing customization, ensuring quality, and enhancing overall shopping experience, are still relevant and should be considered in service provision. Using this we can answer the research question on “How has the COVID-19 pandemic impacted the service provision in the grocery supply chain?”. Firstly, this study shows that COVID-19 has changed the course of action for grocery providers, where they had to provide more online services due to the surge in services demanded by consumers. Some of the

consumers seemed to have experienced the desirable level of convenience of buying their groceries online and getting them at their home doors or at pickup points, but in contrast some found it not that promising. Therefore providing consumers with convenience was neither a merely successful experience nor a merely failure. Secondly, considering the customization, flexibility, or adaptability, caring for safety protocols and a no-complaint feedback in that regard was achieved, or even providing different delivery time slots even though not appreciated by all, shows that the services have grown to be more hybrid. The disappearance of incentives to buy online though shows grocers are not trying to incentivize or get people more into online shopping as much as they intended during the pandemic. Also, there were many who were concerned regarding different prices in-store and online, which may suggest the service providers have not been able to rationalize their pricings or offerings to people who are still doubtful about buying online or at physical stores. Thirdly, regarding quality in online shopping channel one can say that it has had its strengths and weaknesses, however, as people who bought groceries online before COVID-19, didn't mention any problem with quality during or after the pandemic, it can be concluded that even in the high demand situation the quality of the service has been kept. Fourthly, the overall shopping experience was at a level that new consumers appeared in the online purchase channel which means grocers succeeded to some extent to extend their supply chain. However, there were some product shortages which shows that demand forecast and supply management in disruptive occasions still has room for improvement.

6.1. Managerial implications

The findings of this study have implications for grocery retailers and supply chain managers seeking to navigate the post-pandemic landscape effectively. By understanding the drivers behind shifts in consumer behavior and adapting service provision accordingly, stakeholders can position themselves to thrive in an increasingly digital and dynamic marketplace. The significance of this study is to provide effective help to supply chain managers in situations involving public safety incidents. Because we've lived through the pandemic and realized how disruptive it is to the grocery supply chain and how difficult it is to get back to normal operations. Supply chain managers should see this pandemic as an important reference and learn from it to deal with various external and internal supply chain risks in the future. As discussed earlier, consumer preferences are constantly evolving, therefore grocery supply chain managers should plan to keep their supply chain responsive and adaptable to these changing preferences. Investing in technologies that enable real-time inventory visibility, state-of-the-art demand forecasting, logistics systems optimization, flexible contingency plans, communication with customers and personalized offers will be crucial for long-term success and staying ahead of the curve.

Moreover, the findings of this study underscore the importance of understanding and responding to changing consumer preferences and behaviors in the grocery supply chain. As consumer demand drives supply chain operations, retailers, manufacturers, and suppliers can tailor their

strategies to enhance customer satisfaction and loyalty, ultimately driving business success in an increasingly competitive market landscape. Moreover, the price sensitivity of grocery shoppers highlights the need for online grocers to adopt strategic pricing models. It's important to maintain a delicate balance between attractive prices and profitability for the business. Furthermore, while online shopping offers time-saving benefits, in-person shopping provides sensory experiences and social interactions that some consumers value. Retailers and supply chain managers must balance these competing preferences to meet the diverse needs of consumers effectively. Lastly, it is worth noting policymakers can also play an important role in shaping the regulatory environment to support e-commerce growth and push grocery actors moving towards a more agile and reliable grocery supply chain, in order to ensure grocery shoppers satisfaction. From the suppliers and grocers side, more collaborations with policymakers and governments can facilitate desirable changes. Also, scenario planning and stress-testing the supply chains through collaborations with governments can prepare the companies for various contingencies and help to mitigate the risks for the economy of a country.

6.2. Future Research

For future research, according to this study's findings and what Wang et al. (2020) suggests: "While some of the COVID-19 impacts are immediate and short-lived, there may also be some fundamental impacts transforming consumer behaviors and expectations over the long run.", an exploration into the long-term effects of the pandemic on consumer behavior and grocery supply chain could provide valuable insights. This could involve longitudinal studies tracking consumer preferences and shopping habits over an extended period post-pandemic to assess the permanence of shifts towards online shopping and changes in the supply chain. Additionally, investigating the sustainability implications of increased reliance on home delivery services, such as carbon emissions and packaging waste of groceries, could contribute to the development of more environmentally friendly practices in the grocery supply chain. Furthermore, examining the role of emerging technologies, such as 5G, blockchain and specially artificial intelligence, in optimizing supply chain operations, demand forecasting, and enhancing customer experiences is needed. Understanding the intersection of technology adoption, consumer preferences, and sustainability considerations will be crucial for shaping the future of grocery retailing and supply chain management. Furthermore, since this study was conducted more specifically on the situation in a specific locale, expanding the scope and diversity of research in the future may also provide some value to the broader grocery industry operations.

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Appendix

Interview Questions:

1. Q1: Can you briefly describe your experience with online grocery shopping before the COVID-19 pandemic?
2. Q2: What types of grocery items did you typically purchase online?
3. Q3: How often did you engage in online grocery shopping pre-pandemic?
4. Q4: How did your online grocery shopping habits change when the COVID-19 pandemic began?
5. Q5: Did you start shopping online for groceries more frequently during the pandemic? Why or why not?
6. Q6: Were there any specific reasons or events that prompted you to shift to online grocery shopping during the pandemic?
7. Q7: Did you experience any challenges or difficulties in finding and ordering groceries online during the pandemic?
8. Q8: What were the main factors that influenced your decision to shop for groceries online during the pandemic?
9. Q9: Did concerns about safety and health play a role in your decision to shop online? If so, how?
10. Q10: Were there any government regulations or recommendations that affected your grocery shopping choices?
11. Q11: Did you encounter any incentives or promotions from online grocery retailers during the pandemic that influenced your shopping behavior?
12. Q12: Have your online grocery shopping habits and frequency changed since the COVID-19 pandemic started to subside? If so, in what ways?
13. Q13: Are you shopping for groceries online as frequently now as you were during the peak of the pandemic? Why or why not?
14. Q14: What factors have influenced your current online grocery shopping behavior?
15. Q15: Are there any aspects of online grocery shopping that you find more appealing or less appealing now compared to during the pandemic?
16. Q16: How satisfied are you with your online grocery shopping experiences overall, both before and after the pandemic?
17. Q17: Do you believe that online grocery shopping will continue to be a significant part of your shopping routine in the future? Why or why not?
18. Q18: Can you compare and contrast your experiences and attitudes towards online grocery shopping before, during, and after the COVID-19 pandemic?
19. Q19: Have there been any consistent trends or changes in your behavior and preferences throughout these phases?
20. Q20: Were there any factors that remained constant in your decision to shop online for groceries across all three phases?