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Department of Marketing, Operation and Management

**Leveraging the ultra-proximity store network in  
omnichannel retailing: The case of Auchan Retail Portugal**

Sara Godinho Canaveira

Master in Management of Services and Technology

Supervisor:

Prof. Dr. João Carlos Rosmaninho de Menezes, Associated  
Professor in the Department of Marketing, Operations and  
General Management  
ISCTE Business School

November, 2022





**BUSINESS  
SCHOOL**

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## **Dedication and acknowledgments**

Starting a master's degree in the middle of the pandemic was indeed very challenging. It certainly would not have been possible without the help and support of my family, friends, and professors.

I want to thank my professor Teresa Sofia Grilo who always helped me throughout the challenges these two years brought and for not letting me give up.

Thank you to my supervisor, João Menezes, for always being available to help and especially for helping me to close this chapter of my life.

A special thanks to André Vieira and Nuno Nunes, that dedicated their work time to help me during this year, for allowing me to gain professional experience and to have a different perspective of the grocery retail business.

To my mother, father, and brother, thank you so much for all the unconditional support you gave me. It would not have been possible without you.

And a special thanks to my friends that always believed in me and never let me give up during this year. We shared a lot of concerns but ended up overcoming them. We did it!



## **Abstract**

The process of online shopping is changing. In the last years, covid-19 restraints mainly shaped new consumers' profile regarding e-commerce. Faster deliveries and convenience became the two main concerns when ordering online, thus shaping the new generation of e-commerce. Quick commerce arises and becomes the next challenge for the retail world. Omnichannel grocery retail companies can leverage their store's network to serve new consumers' needs, despite having some challenges when setting them as fulfillment locations. It is in this context that the present research emerges.

Auchan Retail Company wants to follow the new generation of e-commerce and serve their customers faster deliveries while still offering a high service level. The case study was mainly developed surrounding the local stores' operations and their inherent challenges. With the help of the literature review, as well as, the data gathered during the internship, it was possible to identify the main opportunities to improve. These opportunities were mainly related to demand planning, assortment size, infrastructures, and inventory management.

After identifying which variables to consider when fulfilling online orders through local stores, it was then purposed two different scenarios with distinct suggestions of how to structure the store operations in each case.

**Keywords:** Grocery retail; Omnichannel; Q-commerce; E-fulfillment; Ship-from-store

## Resumo

O processo de compras online está a mudar. Nos últimos anos, as limitações que o covid-19 trouxe delinearam um novo perfil do consumidor em relação ao e-commerce. Entregas mais rápidas e conveniência passaram a ser os dois principais fatores sempre que existe uma compra online, moldando assim uma nova geração do comércio eletrónico. Surge assim o conceito do Quick commerce, tornando-se no próximo desafio para o mundo do retalho. As empresas de retalho alimentar que adaptaram o omnicanal, podem aproveitar a sua rede de lojas para servir as novas preferências dos consumidores, apesar de apresentarem alguns desafios ao serem definidas como local de abastecimento de encomendas. É neste contexto que é desenvolvido este estudo.

A Auchan Retail Portugal quer acompanhar a mudança da nova geração do e-commerce e oferecer entregas rápidas e, ao mesmo tempo, um nível de serviço elevado. O estudo de caso foi desenvolvido principalmente em torno das operações das lojas de proximidade e os desafios inerentes a esta operação. Com a ajuda dos tópicos da revisão de literatura, bem como, dos dados recolhidos durante o estágio, foi possível identificar quais as principais oportunidades de melhoria. Estas oportunidades estão principalmente relacionadas com o planeamento da procura, o número de referências disponíveis no canal online, as infraestruturas e a gestão de inventário.

Após a identificação das variáveis a considerar no abastecimento das encomendas online a partir das lojas de proximidade, foram propostos dois cenários diferentes com sugestões distintas de como estruturar as operações da loja em cada caso.

Palavras-chave: Retalho alimentar; Omnicanal; Q-commerce; E-fulfillment; Ship-from-store

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## **Glossary of Acronyms**

OC – Omnichannel

SFS – Ship-from-store

OOS – Out-of-stock

## CHAPTER 1

### Introduction

Over the last few years, consumers' habits and preferences have been constantly changing, making retail companies face major challenges to adapt. Especially in the grocery retail landscape, the new era of digitalization and the Covid-19 pandemic made the way goods are purchased and accessed to suffer a substantial shift to a whole new level of convenience. Consumers nowadays seek to order and received their products where, when, and how they want, together with shorter delivery times with high service levels (Aryapadi *et al.*, 2020). Boosted by these factors, the omnichannel (OC) concept has been gaining a lot of importance by providing a seamless experience through any channel, and retailers are already redesigning their distribution strategies (Arslan *et al.*, 2021; Bell *et al.*, 2014). As e-commerce sales grow and consumers' expectations are leaning towards convenience and faster deliveries, the concept of quick commerce or "q-commerce" is shaping the next generation of online shopping (Nierynck, 2020). As so, the need to provide ultra-fast delivery options is making omnichannel retailers use their physical store network to fulfill online orders, that are located closer to consumers – known as the ship-from-store (SFS) strategy (Difrancesco *et al.*, 2021).

However, using neighborhood stores as mini distribution centers implies efficient store operations planning (Hübner *et al.*, 2022). Demand forecasting, assortment, and inventory management are a few examples of complex decisions that retailers must face concerning their store management that directly influence any fulfillment strategy operations' (Mou *et al.*, 2018). Despite the SFS strategy already proved to increase market share and enable retailers to improve their services (Bendoly, 2004), these store formats are not prepared for picking efficiency due to space and store layouts constraints and out-of-stock issues derived from both online and walk-in customers' demand (Hübner *et al.*, 2016). Hence, grocery retailers must find the best way to structure store operations while providing high service levels with excellent operational efficiency.

Even though the current literature shows a significant number of articles dealing with omnichannel retailing (Cai & Lo, 2020), there are some limitations regarding omnichannel fulfillment strategies (Taylor *et al.*, 2019). Hübner *et al.* (2022) studied three OC concepts in the light of store-related planning issues and identified that SFS strategy is under-explored in areas such as assortment and inventory planning and demand forecasting. Moreover, another gap was identified associated with new store operations. According to Mou *et al.* (2018), the author has identified a small number of articles dealing with store operations regarding its new role and how would retailers adapt to it from a cost and effectiveness point of view. Despite further research areas encouraged by researchers, there

is also a motivation from retailers to adapt to the latest shifts in consumer demand, which will be complemented by an internship at the Digital and E-commerce area of a grocery retail company – Auchan Retail Portugal.

Consequently, the present master thesis aims at studying the overall omnichannel fulfillment concept identified in the literature and dealing with associated gaps. It will focus on identifying different opportunities to improve and later create potential scenarios that will influence the SFS strategy operations. These understandings lead to the research question: “How can a grocery retailer structure their local stores' operations while adopting a ship-from-store fulfillment strategy?”.

To answer the purposed question, the literature review has allowed acquiring important insights into the main benefits and challenges that arise from fulfilling online orders from local stores. These understandings have allowed identifying the main variables that will later help to set the different scenarios. Thus, a case study approach was conducted along with access to archival records, direct and participant observation, focus group and a semi-structured interview with the Head of the Digital and E-commerce department of the company, in order to confirm and add knowledge to previous insights.

This thesis is organized into five different chapters. The first chapter is the Introduction where it is detailed the relevance, contextualization, and the main goal of the study, along with the purposed research question on which the thesis is going to be based. The second chapter presents the Literature Review which comprises an overview of the existing knowledge within the e-commerce and omnichannel atmosphere regarding fulfillment strategies. This has enabled to identify some relevant gaps and gather important aspects that will support the present research. The third chapter is related to the Methodology where it is explained which methods were used to collect and later analyze data and, specifically, which approach was used to answer the purposed research question. The fourth and longest chapter starts with a brief contextualization of the company which is being studied in the case study. It proceeds to show some important data about the company's current operation and the main processes relevant to the research. After the data is collected, it will then be continued with its analysis by identifying where it can be improved. The chapter will end with a purposed potential scenario to answer the research question. The last chapter concerns the Conclusion where it is presented the main findings of the research, as well as the limitations found, and further research.

## CHAPTER 2

# Literature Review

This chapter will provide an overview of the main subjects that support the master thesis and mainly allow establishing some familiarity and knowledge of the currently available research surrounding these topics. The subjects were explored in the following databases and search engines: Google Scholar, Emeraldinsight; ScienceDirect; Springerlink; and Taylor and Francis, with specific keywords such as E-commerce; Omnichannel; Quick-commerce; E-fulfillment; In-store picking; and Ship-from-store.

### 2.1. E-commerce in Grocery Retail

The shift in consumers' behavior and preferences, mainly towards convenience, made online shopping to rise and become more popular (Bayram & Cesaret, 2021). In a recent McKinsey report, it was stated that Portugal grocery retail sales have risen 13,2% in 2021 compared with 2019 (McKinsey & Company, 2022). According to Lebow (2021), retail e-commerce sales will also continue to rise until 2023 with a 22,3% share of total retail sales. Over the last few years, the grocery sector had set new standards to serve consumers' demands characterized by speed and selection, setting convenience as the new minimum service level (Mazza, 2022). Along with new demands, the Internet boom has also enabled retailers to reach more customers, expand their services and optimize their resources (Vakulenko *et al.*, 2019).

The thriving of e-commerce and consumers' new habits changed the demand for online orders to instant deliveries (Dablanc *et al.*, 2017). The Covid-19 pandemic played a huge role in new customers' lifestyles and thus, has changed their buying patterns. In fact, according to a report, more than 75% of consumers interviewed in several European countries, intend to continue using instant deliveries after the pandemic situation (McKinsey & Company, 2022). The new consumer wants to be able to buy anytime, at any place, and throughout any channel, seeking excellent service levels and shorter lead times (Aryapadi *et al.*, 2020). Speed and convenience have enhanced a new generation of e-commerce, known as quick-commerce or "q-commerce", where users can choose between different delivery options, with faster deliveries (Villa & Monzón, 2021). After Nierynck (2020) presented the evolution of q-commerce that showed the buying patterns slightly changing during the last years, Villa & Monzón (2021) adapted and offered an updated version with some adjustments.

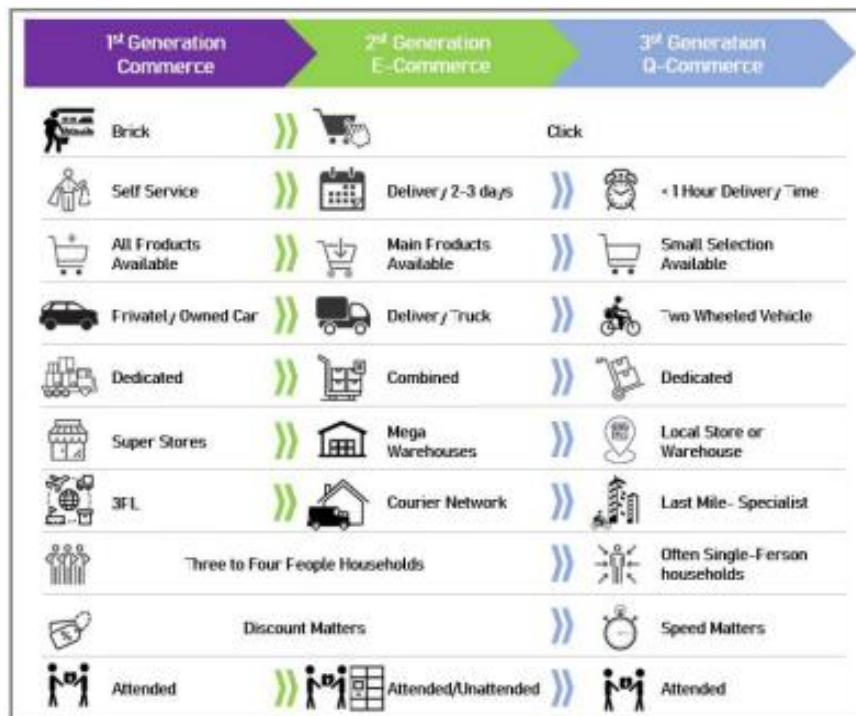


Figure 2. 1 - The evolution of q-commerce. Source: From "Mobility Restrictions and E-Commerce: Holistic Balance in Madrid Centre during COVID-19 Lockdown," by F. Villa and A. Monzón, 2021, *Economies* 9(2), 57

Figure 2.1 shows the main characteristics that changed the B2C (Business-to-consumer) commerce. Traditionally, e-commerce presented us with delivery times ranging from 2-3 days with largely available assortments, dealing with large volumes of orders and trucks delivering them to customers' homes. However, the logistics landscape in q-commerce differs by providing less than one-hour delivery times, smaller online assortments, local stores, or dedicated fulfillment centers to fulfill orders, and two-wheeled vehicles for delivery.

## 2.2. Omnichannel Retailing

Many authors have discussed the omnichannel retailing concept whether is from the demand-side view or the supply-side view (Taylor *et al.*, 2019). Bernon *et al.*, (2016) explained the concept, from a consumer perspective, as "a seamless approach to retailing that offers a single and unified shopping experience across all retail channels formats". On the other hand, Castillo *et al.* (2017) described omnichannel from a supply-side view as "how firms simultaneously manage in-store and online (delivery) channels to create customer value".

In the last few years, current literature shows a considerable number of articles dealing with omnichannel retailing (Cai & Lo, 2020). Hübner *et al.* (2016) presented a research to identify parameters, from a logistical perspective, applied in OC retailing and further discussed its advantages and disadvantages. Wollenburg *et al.* (2018) have also studied the logistics field in OC retailing by

providing a framework for different retail network designs and their respective advantages. Melacini *et al.* (2018) have identified different issues that resulted from the shift to OC retailing in the overall supply chain operations. Even though Hübner *et al.* (2022) applied multiple research methods to present new operational issues in the light of OC retailing, there are still few articles that considered the new role of the store, leveraged by the rise of omnichannel retailing, taking into consideration its operational issues.

### 2.3. E-fulfillment in omnichannel retail

Recently, e-commerce is being shaped by convenience and fast delivery times (Aryapadi *et al.*, 2020). According to Gawor & Hoberg (2019), shoppers who prioritize convenience are more likely to choose fulfillment options requiring home delivery, while also lead time is a critical factor when selecting an omnichannel retailer. In OC retailing, online orders for home deliveries can be fulfilled either in (i) in-store, (ii) dedicated fulfillment centers for online orders, or (iii) central warehouses (Hübner *et al.*, 2016). Barbee *et al.* (2022) presented a more detailed view of all picking locations focusing on the degree of centralization of each method, as showed in Figure 2.2. The options range between in-store picking which is the most decentralized and highly automated warehouses which is the option more centralized.

With convenience and speed of deliveries characterizing the current demand, retailers can leverage their store networks to support their online sales through omnichannel retailing (Bayram & Cesaret, 2021).

Automation used at scale

| Degree of centralization                                                                                                                                                           |                                                                                                                                                                                                |                                                                                                                                                                                                                         |                                                                                                                                                                                     |                                                                                                                                                                                                                                |                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOW                                                                                                                                                                                |                                                                                                                                                                                                |                                                                                                                                                                                                                         |                                                                                                                                                                                     |                                                                                                                                                                                                                                | HIGH                                                                                                                                                                                                                        |
| <b>In-store pick</b><br>Picking on the shop floor in the store; almost no optimization possible for online picking<br><br>•High operating cost<br>•Low capacity<br>•Low investment | <b>Warehouse in store</b><br>Picking fast-moving SKUs in a dedicated area attached to the store; slow movers picked in store<br><br>•Medium operating cost<br>•Low capacity<br>•Low investment | <b>Robotic microfulfillment center (MFC)</b><br>Automated MFCs using pick robotics, stand-alone or attached to physical stores<br><br>•Low operating cost (due to automation)<br>•Medium capacity<br>•Medium investment | <b>Dark store</b><br>Stand-alone facility with optimized layout for online picking but not automated<br><br>•Medium operating cost<br>•Medium capacity<br>•Low to medium investment | <b>'Traditional' warehouse</b><br>Larger stand-alone facility allowing for larger assortment (different degrees of efficiency and automation possible)<br><br>•Medium operating cost<br>•Medium capacity<br>•Medium investment | <b>Highly automated warehouse</b><br>Stand-alone large automated fulfillment centers employing automation across several process steps<br><br>•Low operating cost (due to automation)<br>•High capacity<br>•High investment |

Figure 2. 2 - Potential picking operating models. Source: From "Creating a competitive edge in omnichannel grocery fulfillment" by Barbee *et al.* (2022), McKinsey & Company.

### **2.3.1. Store operations in omnichannel retail**

Mou *et al.* (2018) reviewed the current state of research within retail store operations and identified crucial factors that influence the structure of stores that combines the two channels: online and offline channels. These factors mainly covered three fundamental areas: (i) Demand forecasting; (ii) Inventory management; and (iii) Assortment and display.

#### **2.3.1.1. Demand forecasting**

In the overall components of supply chain management, demand forecasting is considered to be one of the most important (Ge *et al.*, 2019). One of the key factors for retail store operations is demand forecasting, which directly influences decisions in inventory management and labor planning (Mou *et al.*, 2018).

Before the merge of both online and offline channels, retail stores only needed to forecast demand regarding offline customers, which was already challenging due to several factors such as seasonality, holidays, etc. In omnichannel retail, both channels are merged which implies a joint complex forecast due to different purchase patterns (Wollenburg *et al.*, 2018). Along with different purchase patterns, estimating demand for picking online orders from stores is challenging due to endogeneity once it also depends on the stock available in stores at the time the order is placed (Gallino & Moreno, 2020).

#### **2.3.1.2. Inventory management**

Managing inventory is one of the most critical issues and therefore particularly challenging in OC retailing (Arslan *et al.*, 2021). Demand forecasting is not always accurate over the lead time; hence retailers need to guarantee a minimum level of inventory to cover possible demand fluctuations' (Slack *et al.*, 2014). Ensuring a minimum level of inventory means having safety stocks (Ge *et al.*, 2019). Hübner *et al.* (2016) research explains that particularly in an SFS strategy, satisfying both physical and online demand can incur OOS (out-of-stock) situations due to time differences between picking an online order at the store and the time the order is placed, and consequently retailers are required to have higher (online) safety stocks.

Inventory replenishment is one topic that retailers need to deal with in inventory management, once it determines when and how much to refill after customers' order (Hübner *et al.*, 2022). Adjustments in inventory control policy are significantly important once stores must consider both types of demands (Saha & Bhattacharya, 2021). To reduce the effects of leftover inventory and stock-outs, it is crucial to have an efficient fulfillment policy, in terms of time and quantity (Bayram & Cesaret, 2021; Melacini *et al.*, 2018).

### **2.3.1.3. Assortment and display**

Hübner *et al.* (2022) meticulously studied the assortment issue in OC retailing strategies. The authors mentioned that retailers that offer an OC strategy seek to optimize their profit and therefore need to decide, for both channels, the list of products that are going to be offered to customers. Whether in-store or on the online channel, assortment decisions will influence stores and online virtual shelf arrangements.

In the SFS strategy retailers can opt to offer a smaller or a larger online assortment compared with the available stock in-store (Hübner *et al.*, 2016). Local stores closer to consumers are extremely limited in both layout and backroom space, as a result, the online assortment for these types of stores is reduced and usually contains hundreds of SKUs compared with thousands of SKUs in larger stores (Fransoo *et al.*, 2019). If retailers choose to have a wide assortment, it will require more available storage space, the precision and picking of the inventory will suffer alterations, and the productivity of fulfilling a wide-ranging and large order will also be affected (Barbee *et al.*, 2022).

## **2.4. Role of the Store**

According with Adhi *et al.* (2022), there are three possible approaches for OC retailers to use and further redesign their stores' layout, to successfully adapt to the new consumer landscape. The first option consists of retailers maintaining their stores' already existing layout, with online orders picked from the same area where physical customers are shopping. The other option, despite the similarities with the first one, relies on redesigning part of the store which will be dedicated only to picking online orders. And lastly, the third feasible approach implies turning the whole store into a micro hub or dark store, which suggests no serving walk-in customers but only fulfilling and dispatching online orders.

Regardless of whether the store layout is maintained or transformed to serve online orders, retailers must deal with three different landscapes which directly affect the success of the omnichannel reality: consumer, infrastructure, and store operations (Adhi *et al.*, 2022).

### **2.4.1. In-store picking**

Using existing stores to fulfill online orders enables firms to set out an OC fulfillment strategy known as SFS (Ship-from-store) or BOSS (Buy-online-ship-from-store), which uses items stored on retail store shelves' that will satisfy both online orders and walk-in customers (Difrancesco *et al.*, 2021). Sharing inventory between the two different channels (physical and online) can benefit the firm in terms of costs but also cause conflicts between them (Melacini *et al.*, 2018).

On the plus side, retailers will invest less once it is less costly to restructure existing stores and there is no need to design new facilities which makes it easy to set up this strategy (de Koster, 2002;

Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). Besides, for retailers that have a high network presence in dense urban areas, fulfilling online orders directly from the store shelves will enable a fast expansion and shortened delivery times once retailers' stores are located closer to consumers (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). However, on the other hand, picking online orders from existing stores can incur extra costs, especially if they are small neighboring stores that have limited space and almost no backroom storage (Difrancesco *et al.*, 2021; Hübner *et al.*, 2016). Stores' layout and space are not designed for picking efficiency and therefore increase costs (de Koster, 2002; Hübner *et al.*, 2016).

#### **2.4.1.1 Consumer experience**

Sharing inventory between both channels means that online customers can choose from stores' real-time stock when placing an online order. Sharing aisles with pickers may decrease consumer experience making them feel as if they are shopping in a warehouse (Adhi *et al.*, 2022). Moreover, in-store pickers can also interfere with physical customers due to inventory shortages or even due to lack of space (de Koster, 2002; Hübner *et al.*, 2016; Hübner *et al.*, 2022).

#### **2.4.1.2 Infrastructure and IT system**

To avoid the risk of selling the same product twice, retailers must have inventory levels as precise as possible (Adhi *et al.*, 2022). On-shelf availability might become more complex, and retailers need an IT system reliable enough to provide real-time available inventory although they are limited by the time that physical customers checked out, leading to an increased OOS risk (Fernie and Grant, 2008; Hübner *et al.*, 2016; Hübner *et al.*, 2022; Wollenburg *et al.*, 2018). According to Barbee *et al.* (2022), the percentage of an OOS, in a ship-from-store strategy, ranges between 10 to 15%, which can be mitigated by having available substitute products.

The author then suggests some tools for retailers to enhance their picking efficiency through an improved infrastructure. Retailers can use advanced analytics for the substitution process, providing to consumers the available substitute products at the same time they are ordering online, and a product is out of stock. The operating system will also enable firms to rise their picking efficiency. Inserting electronic tags into stores' shelves for a faster picking process led a retail company to reduced picking time between six and nine seconds per product. Another example is giving pickers on-time performance feedback, enabling the possibility to know if they are still on scheduled or if they are late (Barbee *et al.*, 2022).

#### **2.4.1.3 Demand, inventory, and assortment management**

As a result of inexact on-shelf availability and consequently OOS risk, demand planning becomes more costly and complex due to constant uncertainty and mostly due to different channels' purchase

patterns which will potentially lead to higher safety stocks and possible disparity in in-store replenishments forecasts (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). Therefore, it is crucial to have an effective inventory replenishment policy regarding when and how many quantities to order each time (Melacini *et al.*, 2018).

In addition, picking online orders from the store shelves entails that online assortment size needs to be balanced once they have a direct impact on the fulfillment process as well as in inventory levels (Barbee *et al.*, 2022). According to Adhi *et al.* (2022), the ship-from-store strategy is only efficient when the size of the online assortment is less than around one thousand SKUs. Offering a full assortment while having short delivery time windows may become costly to retailers, once shortening lead times makes the number of deliveries in one go to be less than previous standard home deliveries (Barbee *et al.*, 2022).

#### 2.4.1.4 Overall analysis

Despite the SFS strategy increases profitability, if failed to implement, it can lead to higher costs, an increased risk of out-of-stock (OOS) for both channels, and a high number of lost sales (Arslan *et al.*, 2021; Difrancesco *et al.*, 2021). Thus, retailers should study its feasibility once this strategy is most suitable for urban areas with a large network of stores close to consumers and online volume is still low (Wollenburg *et al.*, 2018). When e-commerce orders trespass a certain level, fulfilling in-store will no longer be viable, becoming dedicated fulfillment hubs the next option to obtain efficiency and profitability (de Koster, 2002). All the mentioned advantages and challenges that retailers face when choosing in-store picking are summarized in Table I.

Table 1.1 - In-store advantages and disadvantages summarized (Source: own elaboration)

| Advantages                                                                                                                                                                                              | Disadvantages                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>○ Low investments</li> <li>○ Lower lead delivery times</li> <li>○ Fast expansion</li> </ul>                                                                      | <ul style="list-style-type: none"> <li>○ Higher out-of-stock risk</li> <li>○ Store layout and space restrictions</li> <li>○ Interference with in-store customers</li> </ul> |
| (Adhi <i>et al.</i> , 2022; de Koster 2002; Difrancesco <i>et al.</i> , 2021; Hübner <i>et al.</i> , 2016; Hübner <i>et al.</i> , 2022; Melacini <i>et al.</i> , 2018; Wollenburg <i>et al.</i> , 2018) |                                                                                                                                                                             |

#### 2.4.2. Micro fulfillment centers

One of the options to fulfill online orders, relies on completely redesigning the store layout and transform into a micro hub or dark store (Adhi *et al.*, 2022). Hübner *et al.* (2016) and Wollenburg *et al.*, (2018) describe one common characteristic that differentiates this method from picking at the same time as walk-in customers in the store. It will allow pickers and physical customers to not interact

with each other. Order picking would be far more efficient because the configurations of the store layout will be designed for picking orders and not for displaying products (Hübner *et al.*, 2016). Hübner *et al.* (2016) also state that these fulfillment centers only display products available for the online channel which will allow stocks' availability to be more accurate. In addition, despite the differences, these dedicated fulfillment centers are also located within short distances from consumers' homes, which enables faster delivery times.

These micro-fulfillment centers can also be partially used along with stores depending on the products chosen by customers (Wollenburg *et al.*, 2018). While most products are fulfilled from fulfillment centers, fresh goods can be picked up in stores, enabling retailers to offer a larger online assortment (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018).

Despite the advantages, these micro fulfillment centers can imply more costs to invest in new infrastructures, which may entail a significant level of online orders to cover initial expenses (Wollenburg *et al.*, 2018). However, if the volume of online orders is low, it will not cover the inherent operational costs that these micro hubs feature (Lee *et al.*, 2019).

## **2.5. Final considerations**

Despite the extant literature about omnichannel retailing, current research lacks papers regarding the new role of stores and the inherent operational issues (Hübner *et al.*, 2022). Mou *et al.* (2018) presented a current review of store operations but identified a gap regarding the new role of store from a cost and effective point of view. Also, the current e-commerce landscape is still in early stages regarding the subject of instant deliveries and quick commerce, in the light of OC retailing. These topics are still under-explored once they were discovered due to recent events such as the pandemic. However, it was possible to identify the main areas that will influence structuring stores as fulfillment locations for both offline and online demand, whether they are separated or not.

## Methodology

The purpose of this chapter is to describe and explain the research methodology used to achieve the results of the present research study. Within the general method, the current section will also outline what data collection methods were used in order to reach the answer to the research question purposed.

### 3.1. Research Design

This in-company project thesis will use different methods to have the results for the purposed research question – “How can a grocery retailer structure their local stores' operations while adopting a ship-from-store fulfillment strategy?”.

The thesis will use a case study approach which is usually suitable to answer questions with “how” and “why” (Yin, 2008). Leedy & Ormrod (2018) stated that case studies are also properly indicated when it is intended to study new processes that are poorly understood, which relates to the purpose of the thesis. It aims at exploring the operational process of a new strategy in a grocery retail company. Within the case study methodology, researchers can choose whether the study will incorporate a single case or a multiple case study (Yin., 2003). According to Saunders *et al.* (2010), using a single case study illustrates a unique case, which applies to the thesis, once it intends to answer the research question by using a company as an example. Furthermore, one particularity for using a single case study is to define it, which usually relates to the company where students are working (Saunders *et al.*, 2010).

In the case study strategy, it is usually applied different collecting data techniques, such as interviews, direct or participant observation, documentation, archival records, and questionnaires (Saunders *et al.*, 2010; Yin., 2017). In this case and aiming to meet the outlined objectives, a mixed-method approach will be applied to collecting data. This approach relies on the combination of multiple sources of data, both qualitative and quantitative data. Saunders *et al.* (2017) define it as a “general term for when both quantitative and qualitative data collection techniques and analysis procedures are used in a research design”. The research will follow a convergent parallel design by merging qualitative and quantitative data to enable the triangulation of data. This procedure will allow a better and more consistent understanding of the data that will hopefully lead to similar conclusions (Leedy & Ormrod, 2020).

### 3.2. Data Collection

The data collected was gathered through different techniques used usually in case study designs. The data is mainly parted into two: data from the company's current scenario and information gathered to identify potential improvements and challenges. Figure 3.1 summarizes all steps and data collection techniques use in each of them.

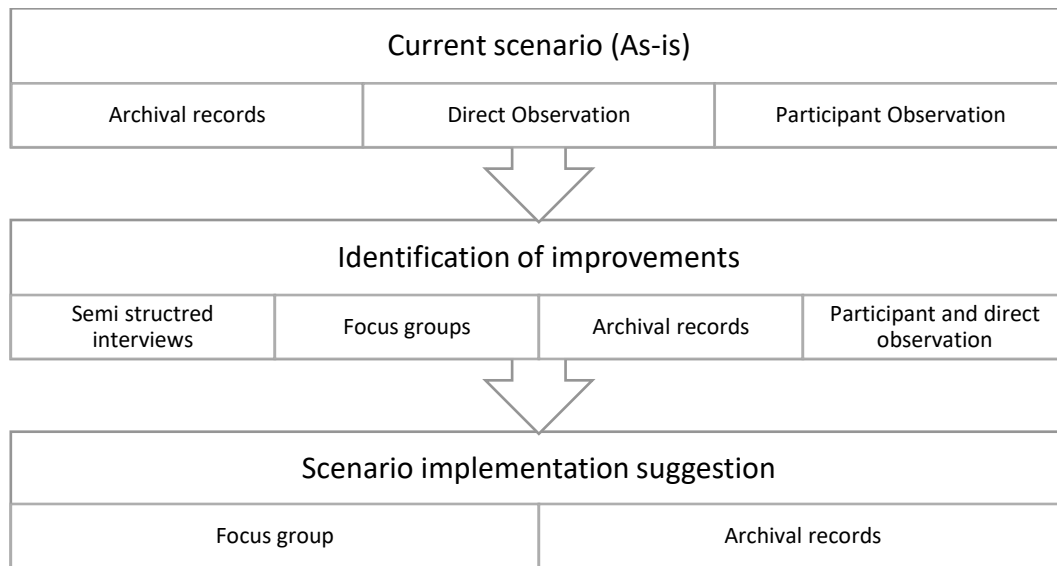


Figure 3. 1 - Data analysis steps and techniques. (Source: own elaboration)

In the first step, most of the data gathered was through archival records which according to Yin. (2017), it contains some advantages. It has precision, covers long periods of time, and has stabilization, meaning it can be reviewed frequently. This technique enabled to gain both qualitative and quantitative information about the company. It allowed getting access to the company records and to present maps with the location of some of the companies' stores, charts with operations characteristics, records of the number of products in each order, preparation times, out-of-stock percentages, number of online orders per day, and customers' flow.

It was also used direct observations, as well as participant observation. These techniques were possible due to the internship in the digital and e-commerce area of the company. They were mostly used to explain the fulfilment of online orders once it was possible to participate in the activities described and become part of the whole process. The internship allowed the opportunity to join the picking process since the order was received until the very last step. Apart from joining processes, it was also viable to investigate several stores to further explore their backroom and front areas to study its feasibility to implement the suggested scenario. Therefore, being part of the process, it enables insights that were not possible to have if it was only by asking for information.

For the identification of potential opportunities and their inherent challenges, besides using archival records and information gathered in participant and direct observations, it was also used two semi-structured interviews with the Head of the Digital and E-commerce department and with the responsible for all E-commerce orders. The semi-structured interviews occurred on-site and online and lasted around 15 minutes each. It enabled the validation of some already established insights (Yin., 2017), and allowed the triangulation of the data for better understanding (Leedy & Ormrod, 2020).

Apart from the interviews, it was also used focus groups with both former interviewees in order to evaluate and identify improvements and later discuss the suggested scenarios.

The semi-structured questions were based on the topics learned in the literature review. The interview had the following structure:

*Table 3. 1 - Semi-structure interview questions (Source: own elaboration)*

| REFERENCE                                                                                                                 | AUTHOR                                       | QUESTION                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                           |                                              | What is your current job position?                                                                                                                                                 |
| <b>E-commerce is being shaped by convenience and fast delivery times</b>                                                  | <b>(Aryapadi et al., 2020; Mazza, 2022).</b> | Consumers' habits are changing, increasingly seeking more and more speed and convenience. In this context, what strategies have been or are being implemented to meet these needs? |
| <b>Omnichannel retailers can use their stores and further meet new consumers demands</b>                                  | <b>(Bayram &amp; Cesaret, 2021)</b>          | The implementation of an omnichannel strategy is considered a response to new market trends. Has this strategy already been implemented at Auchan?                                 |
| <b>In order to adapt to new consumer habits, there are three possible approaches for OC retailers to use their stores</b> | <b>(Adhi et al. 2022)</b>                    | If yes, how can the reconciliation of digital and physical stores help satisfy new consumer preferences (speed and convenience)                                                    |

|                                                                                                                                                                                        |                                                                                                                                                                                                          |                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Q-commerce mainly fulfills orders from local stores or micro hubs</b>                                                                                                               | <b>(Villa &amp; Monzón, 2021)</b>                                                                                                                                                                        | Auchan has three physical formats: Hypermarkets, supermarkets and proximity stores. Which format do you consider bringing more benefits to respond to quick commerce? Why? |
| <b>There are some advantages when fulfilling from stores, such as, low investment, shorter lead time; as well as some disadvantages like OOS risk, store layout, walk-in customers</b> | <b>(Adhi <i>et al.</i>, 2022; de Koster 2002; Difrancesco <i>et al.</i>, 2021; Hübner <i>et al.</i>, 2016; Hübner <i>et al.</i>, 2022; Melacini <i>et al.</i>, 2018; Wollenburg <i>et al.</i>, 2018)</b> | What advantages does this format have for satisfying fast deliveries? And disadvantages?                                                                                   |
| <b>There are three main areas when serving both online and offline demands through stores: demand forecasting, inventory management assortment and display</b>                         | <b>(Mou <i>et al.</i>, 2018)</b>                                                                                                                                                                         | In your opinion and from an operational point of view, what are the factors to take into account when fulfilling online orders from this store format?                     |

## **Data Analysis and Discussion**

The current chapter presents all the data gathered during the internship in the company that will be the basis for the thesis. After the data analysis, it will proceed to the identification of improvements in the current scenario, in order to propose an improved scenario with the suggestions made previously.

### **4.1. Company Introduction and contextualization**

Auchan group emerged in 1961 with the opening of its first store in France – Roubaix, expanding rapidly into the Portuguese territory. It was in 1970 that the group opened the first supermarket in Portugal through the Pão de Açúcar insignia, thus expanding in the following years with the opening of several stores throughout the country.

Currently, Auchan Retail Portugal group has 69 physical stores, differentiated by their shape and size, including 31 Hypermarkets, 4 Supermarkets, and 34 ultra-proximity stores. In addition to the presence on the physical channel with three different formats, the group also presents two online channels: the website and the app. It is through the offer of these channels that it presents an omnichannel format in order to offer the best service adapted to the needs of customers.

In response to the pandemic situation and the latest consumer needs that focus on convenience and speed of deliveries, the group intends to respond to those needs by offering shorter delivery time windows. Despite the recent partnership with a fast delivery company, Glovo, which offers short time windows (approximately 30 minutes), it is still not possible to offer a fast delivery service to Auchan customers. It is in this context that the present study emerges, in a project not yet developed to potentially improve the portfolio of existing delivery services.

### **4.2. Current Scenario**

#### **4.2.1. Dimension of Auchan operation**

Auchan Retail Portugal offers both online and physical channels in order to meet consumer needs and expectations and provide their customers with an efficient shopping process.

Currently, the company has 69 stores differentiated by three types of formats: hypermarkets, supermarkets, and ultra-proximity stores which are going to be further explained. Apart from the physical stores, where customers can purchase their goods, the company also offers around 28 drive locations and more than 400 pick-up locations.

In addition to the physical channel, Auchan also offers an online channel. The online channel features two platforms: the online store and the official app. In the online store or store website, customers can choose from more than 40,000 products with a portfolio of delivery services to choose from. In addition to the website, the company also provides an app where it is possible to interact within the store, whether is to check the available products, to read products' code bars in order to pay at the end of the visit or even to order online and receive it at a place of choice.

#### 4.2.1.1. Hypermarkets and supermarkets

Nowadays, the company offers 31 hypermarkets and 4 supermarkets across Portugal. Both types of stores are mainly characterized by their extensive area, either in the front area (where walk-in customers are shopping) or in the backroom area. The former presents an area of 10.000 and the latter an area of around 2000 square meters. Thanks to their substantially large space, they can offer 70000 and 20000 references, respectively.

The location of these stores, in contrast with smaller stores, is further away from urban centers, as illustrated in figure 4.1, thereby making the travel time from the store to the consumer's chosen destination a little bit higher.

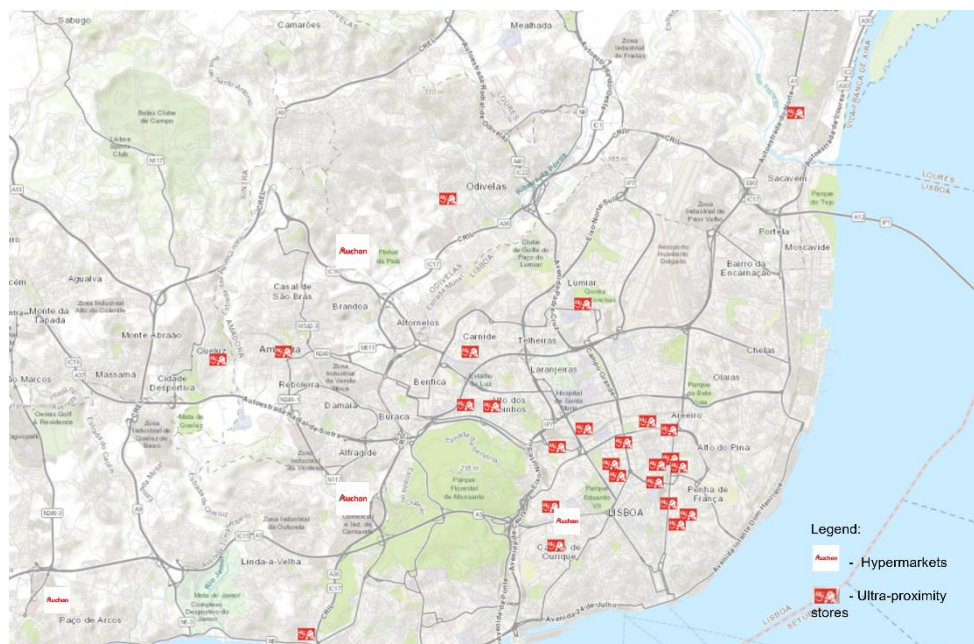


Figure 4. 1 - Location of Hyper/Supermarkets and Ultra-proximity stores. (Source: Adapted from the company)

#### 4.2.1.2. Ultra-proximity stores

Auchan Retail Portugal has currently 34 ultra-proximity stores. The ultra-proximity store format is considered to be a neighborhood store, since they are positioned in urban centers, in the heart of large

cities (Figure 2). The location of these stores enables the offer of purchases characterized by speed and convenience once they are closer to consumers’ homes. Despite their small format, with an area of around 350 square meters, these stores have approximately 6000 SKUs available for walk-in customers. Each store has a distinctive time to fulfill depending on their location, which normally occurs every day, except Sunday, between 06:00 and 11:00 in the morning.

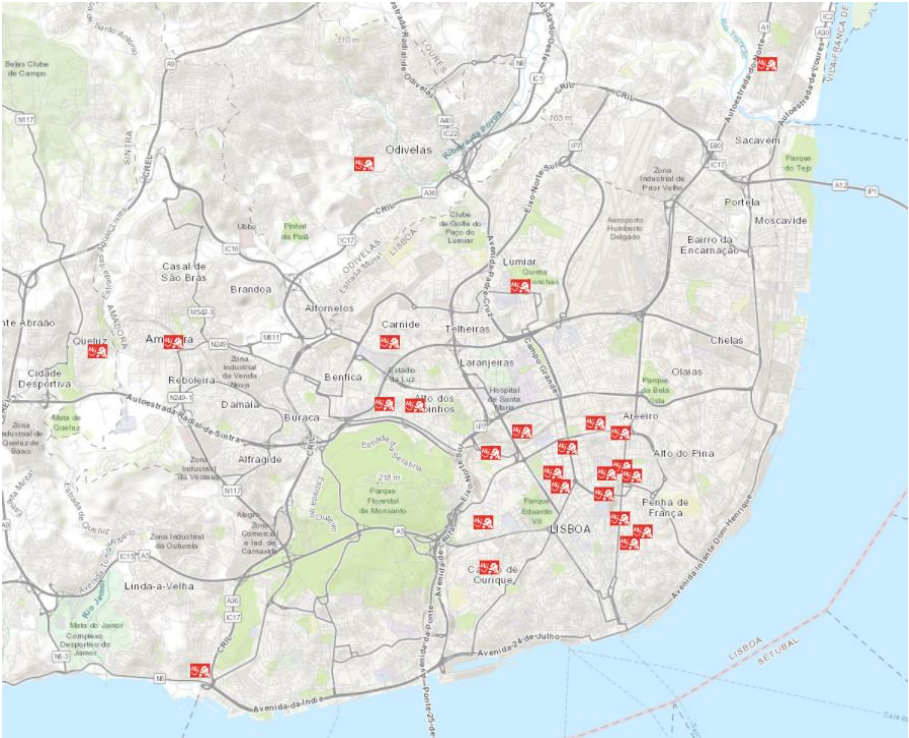


Figure 4. 2 - Location of ultra-proximity stores. (Source: from the company)

From a sample of four ultra-proximity stores, all located in the middle of urban centers, close to consumers’ homes, it is possible to retreat what was the weight each of them played in total sales percentage. Table 4.1 shows that stores 1,2 and 3 have similar percentage of sales (27%,29% and 30%), as opposed to store 4 that only had 14% of total sales.

Table 4. 1 - Ultra-proximity stores sales in %. (Source: own elaboration)

| 2021                    | Sales in % |
|-------------------------|------------|
| Ultra-proximity store 1 | 27%        |
| Ultra-proximity store 2 | 29%        |
| Ultra-proximity store 3 | 30%        |
| Ultra-proximity store 4 | 14%        |
| Total                   | 100%       |

The physical flow of customers varies depending on the day of the week, but typically has identical attendance peaks throughout the whole week. Table 4.2 shows the percentage of in-store customers

(tickets) throughout a random week since the opening of the store, 9:30 am, to its closure, 9:30 pm. Figure 4.3 reinforces and gives a better visualization of the store's affluence. It is possible to confirm that the major peaks happen in the opening of the store between 9:30 am and 10:30 am, and in the middle of the day between 12:30 pm and 14:30 pm.

Table 4. 2 - Percentage of walk-in customers during the day. (Source: own elaboration)

| Time Period | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|-------------|--------|---------|-----------|----------|--------|----------|--------|
| 09:30       | 17%    | 15%     | 17%       | 17%      | 17%    | 14%      | 9%     |
| 10:30       | 8%     | 9%      | 8%        | 8%       | 7%     | 6%       | 6%     |
| 11:30       | 6%     | 6%      | 6%        | 7%       | 8%     | 7%       | 11%    |
| 12:30       | 9%     | 8%      | 7%        | 8%       | 9%     | 9%       | 11%    |
| 13:30       | 13%    | 11%     | 10%       | 11%      | 11%    | 7%       | 6%     |
| 14:30       | 9%     | 7%      | 9%        | 9%       | 9%     | 8%       | 8%     |
| 15:30       | 5%     | 6%      | 7%        | 6%       | 6%     | 9%       | 6%     |
| 16:30       | 5%     | 8%      | 8%        | 7%       | 6%     | 6%       | 9%     |
| 17:30       | 8%     | 8%      | 6%        | 7%       | 7%     | 6%       | 6%     |
| 18:30       | 6%     | 7%      | 8%        | 7%       | 6%     | 7%       | 10%    |
| 19:30       | 7%     | 8%      | 7%        | 7%       | 7%     | 9%       | 11%    |
| 20:30       | 7%     | 6%      | 6%        | 6%       | 6%     | 9%       | 8%     |
| 21:30       | 1%     | 0%      | 1%        | 1%       | 1%     | 1%       | 1%     |

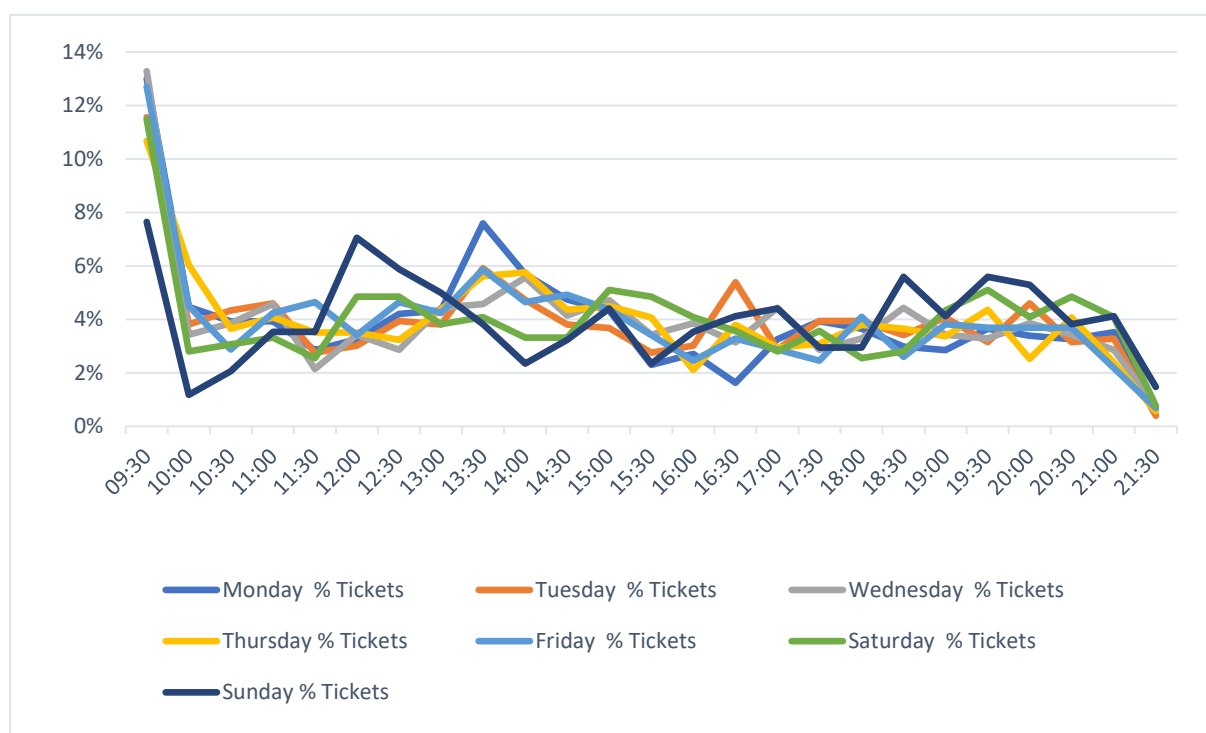


Figure 4. 3 - Percentage of walk-in customers during the day. (Source: own elaboration)

#### 4.2.2. Delivery options

Whenever an order is placed, either online or directly in the store, Auchan customers' have available a wide range of choices for the type of delivery they desire. Whether they want to pick the order later or prefer the comfort of their home and receive it at their doorstep, there are some possibilities to choose from. As demonstrated in the Table below, there are three main types of delivery options: (1) Home delivery, (2) Drive, and (3) Click and Collect.

The home delivery option is available both in the online channel and in-store, meaning that when the order is placed through the online channel (website or app) or the order is placed directly in the store, it is possible to ask to have it delivered at home. The second option allows customers to order online, via a website or app, and ask for the order to be delivered to the driving spot. The drive spot is a place to park the car in the parking lot, that is equipped with a button, requiring the customer only to press it and confirm the order number to receive the purchase in less than five minutes. Lastly, the third option comprises picking up the order inside a store of choice, as well as, collecting the order at one of the more than 400 pickup points available. As soon as the order is available for pickup, the customer receives a message with a confirmation code to present at the time of collection.

Along with a partnership with a quick-commerce company, Glovo, Auchan allows another type of delivery that consists of faster lead times. Consumers have access, through the Glovo app, to a short list of products offered in Auchan stores near their current location and receive them through this service.

*Table 4. 3- Delivery options. (Source: own elaboration)*

| Delivery Options |       |                                                  |       |
|------------------|-------|--------------------------------------------------|-------|
| Home delivery    | Drive | Click and Collect<br>(stores and pick-up points) | Glovo |

##### 4.2.2.1. Delivery time windows

Aside from a diverse choice of delivery types, delivery times also vary depending on the option chosen – Drive, Click and Collect, or home delivery.

As shown in table 4.4, located below, for the Drive option, the lead time is at least four hours which relates to the time since the order is placed until it is delivered to the customer. Delivery slots are available from 10:30 a.m. until 10:00 p.m. with five different time slot options available per day. In the case of click and collect, with includes both stores and pick-up points, the delivery time windows are slightly shorter being only three hours since the order is placed until it is delivered to the final consumer. The slots also differ from the previous example once they are available since 12:00 p.m. until 09:00 p.m. Unlike the options described above, home delivery is the option that offers the longest

lead time, seven hours. However, it is the delivery option that offers more time slots so that the customer can choose which is the most convenient. Hence, slots are available since 09:00 a.m. and end at 11:00 p.m. with more than ten different slots.

In contrast with delivery options offered and delivered by the company itself, Glovo services offer a lead time of less than thirty minutes. Once this service is characterized as being on-demand, there are no fixed time slots, which makes the service available since the store opens until its closure.

*Table 4. 4 - Delivery time windows. (Source: own elaboration)*

|                                                         | <b>Lead Time</b> | <b>First slot</b>    | <b>Last slot</b>     |
|---------------------------------------------------------|------------------|----------------------|----------------------|
| <b>Home delivery</b>                                    | 7 hours          | 10:30 a.m.           | 11:00 p.m.           |
| <b>Drive</b>                                            | 3 hours          | 10:30 a.m.           | 10:00 p.m.           |
| <b>Click and Collect</b><br>(Stores and Pick-up points) | 4 hours          | 12:00 p.m.           | 09:00 p.m.           |
| <b>Glovo</b>                                            | 30 minutes       | Opening of the store | Closure of the store |

#### **4.2.3. E-commerce**

Auchan Retail Portugal counts on several stores located all over the country. In Lisbon, standard e-commerce orders fulfillment, which are orders made through the company online channel, is assured by a hypermarket that uses both its backroom space and the store space where physical customers are usually shopping. The backroom space is organized so that there is a specific area for the storage of stock to supply the store itself, as well as a dedicated area for the process to fulfill online orders.

Whether the order is being dispatched to customers' homes, to the drive, to stores, or to pick-up points, it will always be prepared in the backroom of this store. As a consequence, the decision to fulfilling all orders from the same store, regardless of the delivery location, will most likely impact lead times. The only exception is orders that arrived from Glovo's service that will be prepared in any store near the location where the consumer is placing the order. That is, they can be prepared either in hypermarkets, supermarkets, or in ultra-proximity stores.

##### **4.2.3.1. Inventory and online assortment**

As mentioned before, all three delivery services available in Auchan's channels are fulfilled in the same store. The assortment available on the website or the app is the same regardless of the delivery option chosen, due to the place used for the supply.

Currently, customers have access to around 40,000 different articles through the company's online channel. The reason lies in the preference to offer more product variety rather than quicker deliveries. Being able to have both circumstances still remains a challenge, since faster deliveries mean fulfillment locations closer to consumers that have far fewer references than larger stores.

Nevertheless, through Glovo's services, it is only possible to have a smaller online assortment. Auchan only provides between 600 and 4000 SKUs for this service for all types of orders, depending on the type of store assigned. This means that although the catalogue is the same, the product availability is different between the three different store formats, thus explaining the difference.

The inventory replenishment regarding online assortment is treated differently when comparing the two services. For Glovo's orders, Auchan chooses yet not to have any kind of safety stock or replenishment of products on a regular basis. On the other hand, for scheduled orders made directly on their online channels, stock replenishment is previously calculated.

#### **4.2.3.2. Standard e-fulfillment process**

As shown in the figure 4.4, the process of e-fulfillment starts whenever a customer places an online order through the website or the app and asks to be delivered at home, at a store, in a pick-up point or even in the drive. As previously explained, all orders are prepared in a pre-defined hypermarket, regardless of the delivery destination.

The process is identical in all kinds of delivery options, so, as soon as the customer finishes the online purchase, the request enters directly into the company informational system. After receiving the information about the purchase, the order is going to be assigned and prepared in the backroom of the store. The first step is to print the listing of items that are included in the order so that they can be assigned to different pickers. The picking process becomes a little more complex as it will depend on the type of items that are on the listings. Since the store area is quite large and to make the process as efficient as possible for the picker assigned, some products are already stored in the backroom area of the store. On the other hand, some of them must be picked directly from the front area of the store. After the picking process is done, the items are going to be stored and prepared for the last mile.

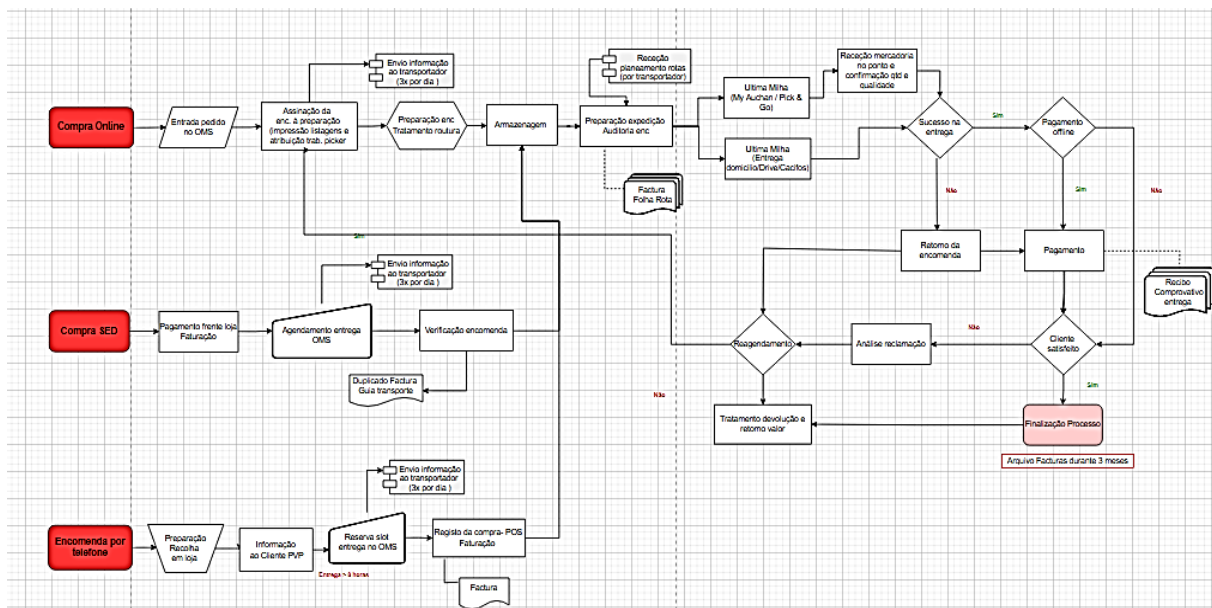


Figure 4. 4 - E-fulfilment process. (Source: from the company)

#### 4.2.3.3. Non-standard e-fulfilment process

The process of fulfilling an order coming from Glovo's service is different than if it was a standard request. Even though the order is placed through an online channel, it is not placed through the official e-commerce service of the company under study. Therefore, instead of being only fulfilled by one store format, i.e., a hypermarket, the order can be assigned to all kinds of formats, depending on the location of the customer. However, even if the order is assigned to a hypermarket, supermarket or an ultra-proximity store, the process will be the same.

The process starts as soon as the customer finishes the order in the Glovo app. This is then automatically assigned to a store that is able to fulfil the order efficiently. If the order is not accepted by any store, it will be redirected to another nearby store that is able to take it. Some of the reasons why the order may be rejected include a lack of staff, excessively queued orders, or a lack of stock. When the assigned store accepts the order, it receives a notice with the number and type of items. Employees that usually are allocated to this task, are acquainted that the request will be picked up a few minutes after receiving the order confirmation, so it must be prepared in the shortest possible time. Since customers using this service have few references available and a quantity limit, the fulfilment task can be done only by one store employee, regardless of the size of the store.

Figure 4.5 presents at what hours of the day this type of order was placed the most, through the span of one month. It is apparent that the majority of orders happened between 11 am and 7 pm, reaching its peak at 6 p.m.

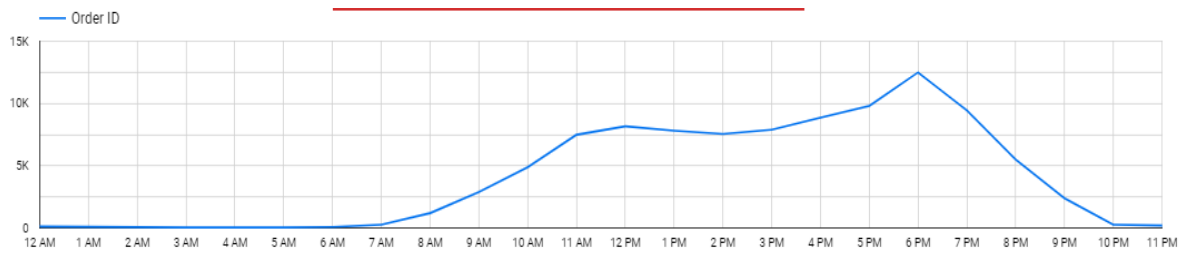


Figure 4. 5 - Non-standard order per hour. (Source: from the company)

The average number of articles per order is shown in the Table below. The data used was collected from six different stores with two distinct formats aiming to reinforce the reliability of the obtained results. They differ in terms of their location and size. While one is located closer to consumers' homes and has a few square meters, the other is further away, although it presents a wider area.

Table 4. 5 - Average number of articles and average preparation time. (Source: own elaboration)

| March 2022             | Store   | Average number of articles per order (unites) | Average preparation time (minutes) |
|------------------------|---------|-----------------------------------------------|------------------------------------|
| Ultra-proximity stores | Store 1 | 11                                            | 15                                 |
|                        | Store 2 | 9                                             | 11                                 |
|                        | Store 3 | 15                                            | 16                                 |
| Hypermarket            | Store 4 | 12                                            | 24                                 |
|                        | Store 5 | 11                                            | 30                                 |
|                        | Store 6 | 8                                             | 29                                 |

The average number of articles per order is similar in both types of stores, as it can be seen in the table above. The number varies between 8 and 15 units. However, when it comes to the average preparation time per order, it already shows a variation between the two types of stores. While stores with a smaller area (ultra-proximity stores) show preparation times between 11 and 16 minutes, hypermarkets show considerably higher values, ranging between 24 and 30 minutes.

Table 4.6 illustrates the lack of efficiency regarding available stock to satisfy Glovo's orders. Although both store types differ in their characteristics, both their percentages are significantly high.

Table 4. 6 - Average number of articles and preparation time per order and % of incomplete orders. (Source: own elaboration)

| March 2022             | Store   | Average number of articles per order (unites) | Average preparation time (minutes) | % of incomplete orders |
|------------------------|---------|-----------------------------------------------|------------------------------------|------------------------|
| Ultra-proximity stores | Store 1 | 11                                            | 15                                 | 20% - 40%              |
|                        | Store 2 | 9                                             | 11                                 | 20% - 40%              |
|                        | Store 3 | 15                                            | 16                                 | 25% - 45%              |
| Hypermarket            | Store 4 | 12                                            | 24                                 | 45% - 65%              |
|                        | Store 5 | 11                                            | 30                                 | 40% - 60%              |

|  |         |   |    |           |
|--|---------|---|----|-----------|
|  | Store 6 | 8 | 29 | 35% - 55% |
|--|---------|---|----|-----------|

### 4.3. Identification of potential improvements and challenges

Following a detailed explanation of the main topics linked with Auchan's operations of e-commerce landscape, the next step is to identify what of those matters have room to improve and to explain why. The present analysis will be supported by the content drawn from the literature review, as well as, endorsed by two semi-structured interviews with the Head of The E-commerce and Digital department and with the Responsible of E-commerce Operations from Auchan Retail Portugal.

Having into consideration all the information presented above, it was possible to identify what topics are going to be further explored and gathered to create a potential future scenario. Table 4.7 summarized all potential improvements, as well as the main reasons that support the choice.

*Table 4. 7 - Identification of opportunities. (Source: own elaboration)*

| Nº Opportunity | Content                         | Reason                                             |
|----------------|---------------------------------|----------------------------------------------------|
| <b>1</b>       | Delivery options and lead times | Lack of quick commerce service; High waiting times |
| <b>1.1</b>     | Fulfillment location            | High preparations times                            |
| <b>1.2</b>     | Inventory management            | High incomplete orders                             |

#### 4.3.1. Opportunity 1 – Delivery options and lead times

The first opportunity to be identified will be the basis and foundation for the following ones to be listed. As explained in table 4.3, Auchan currently presents three different delivery options for customers who make purchases through the company website or the app. These options allow the firm to offer a diversified delivery options portfolio, enabling consumers to order through any channel, when and whenever they choose, thus meeting what is cited in the literature (Aryapadi *et al.*, 2020).

However, although having several options, it still lacks one capable of responding to consumers' latest needs. In this case, delivery time windows are not yet suitable to satisfy consumers' new habits in the new era of e-commerce, once these are longer than expected by shoppers who prioritize speed and convenience. This problem is not in line with the literature, as Villa & Monzón (2021) show us that the new era of e-commerce is about having a range of delivery options with a lead time of less than one hour. As so, despite the wide portfolio of delivery options, the minimum available lead time is currently 7 hours for home delivery, 3 hours for the drive, and 4 hours for the click & collect option, as explained before in table 4.4. Moreover, although there is a partnership with a company that delivers grocery requests within 30 minutes, the basket offered is extremely limited and it does not fulfil directly Auchan online customers.

Therefore, it is possible to identify a potential opportunity. By expanding its delivery option portfolio, the firm would be able to offer a service that allows delivery within 30 minutes. Thus, by upgrading in this area it would be possible for the company to adapt to the new e-commerce landscape and thrive in the omnichannel world.

#### **4.3.2. Opportunity 1.1 – Fulfilment location**

The next opportunity emerges, as previously stated, based on the possibility to offer a quick delivery service to meet new consumers' habits and requirements.

Offering shorter delivery time windows is directly linked with the fulfilment location. Currently, the company fulfils all standard online orders through the backroom of one of its hypermarkets, using therefore, this space as a combined fulfilment center. In other words, for standard orders, regardless of where the order is being shipped to, it is always fulfilled in the same place, thus increasing delivery times. In figure 4.1, it is visible that Auchan hypermarkets are more dispersed and localized further from the city urban centers, than ultra-proximity stores. Therefore, increasing lead times for all types of orders. If a customer chooses to pick the request at a store closer to his location, the order must be prepared in the hypermarket and only then it is going to be dispatched to the chosen store. This way, there is an opportunity to use proximity stores locations as the location for express deliveries, leveraging their dense network and location. Retailers that have a considerable number of stores in dense urban areas, have the possibility to short deliver times once these are located closer to consumers (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). One interviewee agreed with both authors *"...Normally, both hypermarkets and supermarkets have more room space, but proximity stores tend to be better located. Using this type of store brings benefits because they are closer to urban centers..."*.

Apart from the order fulfilment location, preparation time is also different between these two store formats. Through the data analysis of non-standard orders, it is possible to have some information about the 30-minute orders' preparation time. As shown previously in table 4.5, orders fulfilled in hypermarkets presented longer preparation times, while picking orders in proximity stores takes less time. One interviewee confirmed *"...Hypermarkets present a larger area, and since they have a wider assortment, it takes longer for the pickers to find the desired item. However, proximity stores may respond better, as the assortment is smaller and more towards convenience..."*, stating what is referred in the literature. Choosing a small number of items in a store with a large area is more time-consuming than doing it in a small store with less aisles. Both stores' layouts are not made for picking efficiency (de Koster, 2002; Hübner *et al.*, 2016).

As a result, it is identified an opportunity to change the fulfillment location regarding quick deliveries that will be further discussed.

#### 4.3.3. Opportunity 1.2 – Inventory management

Following the last identified opportunities, the third and last opportunity is also linked. As stated in the literature, inventory management is one of the steps that are essential to thrive in omnichannel retailing (Arslan *et al.*, 2021).

When the process of supplying the online channel through Glove service was described, it was observed in table 4.6 that the percentage of incomplete orders varied across the different store types. In a hypermarket, the percentage range between 35 and 65%, while in smaller stores it only ranged from 20% to 45%. Despite their gap, both percentages are high and after the focus group it was possible to identify what reasons justify these percentages. Since these quick delivery orders are low, in relation to walk-in customers and with standard online orders, the company does not do yet any kind of forecast, replenishment policy for this type of service or have any kind of safety stock. Another reason for these percentages has to do with the gap time between the order picking and walk-in customers serving on those same products that are on the online request list. Online inventory inaccuracy can also explain the more the high percentages of out-of-stock orders, which is related to the infrastructure and IT system that is behind online stock levels.

Having these three reasons in consideration, the company faces some challenges: Demand planning for non-standard online orders, accurate IT system, inventory replenishment, and safety stock levels. As stores are the fulfillment location, online and physical channel buying patterns are merged and become complex due to its difference (Wollenburg *et al.*, 2018). In one question regarding what factors to have in mind when fulfilling online orders from store shelves, both interviewees answered, *“When talking about fulfilling from stores, the key is to have a real-time stock reading between items that online customers are buying and what the store must satisfy. This way, we can guarantee a better level of service, where we do not fail to serve the items that the client asks of us, because that is what we have at the moment to serve”*, thus meeting what is cited in the literature. The accuracy of the IT system responsible for updating online stock levels is very important when using store shelves to fulfill online orders (Fernie and Grant, 2008). Therefore, confirming once more the importance of a reliable enough infrastructure.

Apart from planning both online and physical demand, inventory replenishment and stock levels remain also especially important once these will need to suffer alterations. When asked about the main challenges that this type of fulfillment might bring considering inventory management, the interviewee stated, *“We would have an advantage in stocking the store in the normal way, simply adjusting the needs to meet the digital demand, in addition to the already known physical demand...”*. Thus, meeting what is found in the literature. An inventory control policy is crucial for stores that consider both demands (Saha & Battacharya), and consequently, reduce excess inventory or stock-outs (Bayram & Cesaret, 2021; Melacini *et al.*, 2018).

#### 4.4. Potential Scenario implementation

After identifying the main areas to improve and what challenges might arise it is possible to suggest a potential scenario, although will not be implemented in time to see the underlying results.

The idea behind omnichannel is to have an easy and integrated experience whenever a customer interacts with any channel (Bernon *et al.*, 2016). Apart from having two different channels that are mutually linked in several processes, there is still room to improve their omnichannel operations. Consumers' recent habits seek for faster and more convenient deliveries (Mazza, 2022), enabling the rise of instant deliveries (Dablanc *et al.*, 2017). Instant deliveries have affected the e-commerce third generation, being them characterized by deliveries of less than 1 hour fulfilled from local stores or micro-hubs (Villa & Monzón, 2021). Nowadays, customers who order through Auchan online channels only have the possibility to wait at least three hours if they are able to pick up the order later at a designated location. The remaining option is to wait a minimum of 7 hours if they want home delivery. Thus, the offered portfolio is not in line with the literature previously stated.

Auchan has currently 34 ultra-proximity stores around the country. In figure 4.2, it is possible to see their location within the city of Lisbon. They are located closer to consumers' homes, within the neighborhoods, and thus be better options than larger stores located further away. Their dense network and location can bring an advantage for Auchan to expand their delivery service and offer shorter delivery time windows (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). Moreover, companies that embrace omnichannel retailing can use their stores to increase their online sales (Bayram & Cesaret, 2021). These stores are characterized by their smaller area, with very limited backroom space and a much narrow assortment compared with other store types. However, offering a new service for instant deliveries on stores with both demands may overlap and jeopardize their already existing physical activity, thus creating challenges in stores' operations.

As stated in the literature, omnichannel retailers can leverage their store networks in three different ways: either the store maintains its current format or it gets partially or fully redesigned (Adhi *et al.*, 2022). In this case, it will be suggested two scenario approaches.

##### 4.4.1. Scenario 1

The first scenario implies that the company uses its existing local stores layout, or ultra-proximity stores for a quick delivery service available on their online channel. Using their dense ultra-proximity stores network for online orders, entails fulfilling both online and walk-in customers, which can bring different challenges. When quick-commerce orders increase significantly, fulfilling in-store with both demands would no longer be viable (de Koster, 2002). For this reason, the suggestion is to offer this service in stores that fulfill both demands, as long as the number of orders is low.

The gathered data from the non-standard quick delivery service allowed to gain some insights from an operational point of view of using these types of stores. The viability of this approach is going to be partially supported based on these same data, while on the other hand was also based on the literature review as described above.

With online orders continuing to rise in the following years (Lebow, 2021), and more than 75% of consumers wanting to continue using instant delivery (Mckinsey & Company, 2022), it is expected that launching this service for the company online channel is equally served. Although the first few months are a learning period to adjust some operations, it is necessary to start with a few suggestions in the following main areas: demand planning, inventory management, infrastructure, and online assortment.

Regarding the area of demand planning, the first step is to plan the new demand, both physical and online, once the chosen stores will be serving both online and offline channels, which implies a more complex demand forecast (Wollenburg *et al.*, 2018).

One of the disadvantages of choosing stores that have both walk-in customers and a service to fulfill online orders from the shelves is high out-of-stock risk (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). The company has two options to mitigate the risk of OOS: either it increases the stock level in store or have better replenishment policies. In this case, ultra-proximity stores have an area of a few square meters, the backroom space is very limited, thus reducing the space for safety stocks. Currently, the store is replenished every morning except Sundays, being then suggested that either (1) the amount of the same products replenished is higher having in mind the available shelf space, or (2) the replenishment process is split in two times instead of only one in the mornings. This type of store presents a more accentuated physical flow of customers between 9:30 am to 10:30 am and between 12:30 and 14:30 pm, as shown in figure 4.3 and on table 4.2. Regarding data from non-standard e-commerce orders that are similar to the one that is going to be implemented, figure 4.5 shows that most orders are placed between 10 am and 7 pm, reaching their peak at 6 pm. Having this in consideration, the suggested time to replenish is first early in the morning before the opening of the store and after lunch, around 2 p.m. The other option to lessen OOS percentages is to have available substitute products when a product becomes non available in the online channel (Barbee *et al.*, 2022).

A new or improved IT system will be the basis of operations regarding inventory management. To reduce the percentage of incomplete orders, it is suggested that the system shows on-time stock availability, adding substitute products options if they are out of stock. As so, despite reducing preparation times because pickers will not lose time reaching consumers, it will also reduce the risk of having inaccurate online stock levels.

Furthermore, in this case, stores with both demands have a layout that is not designed for picking efficiency (de Koster, 2002; Hübner *et al.*, 2016), however, they are characterized by their small area

which become easier for pickers to find products. Nevertheless, picking efficiency should be enhanced by measuring employee's performance (Barbee *et al.*, 2022). In the interview, it was cited that this is one of the critical factors to have in mind *"It is crucial to have..., and a system for monitoring operational tasks that ensures the supervision of compliance with the defined timings in order to fulfill the promised made to the client"*. It is then suggested to use one of the authors' suggestions to upgrade picking efficiency. An IT system that could also tell employees if they are on-time or behind scheduled while picking the articles.

Using smaller stores to fulfill instant deliveries impacts the available basket size. For standard orders, the online assortment size is around 40 000 references. But ultra-proximity stores have only around 6000 SKUs available in the store, becoming then one potential disadvantage of choosing these stores as fulfillment locations, as stated in the interview *"A hypermarket may offer a larger assortment to such service, which may pay off for the customer who prefers more choice over less time"*. However, as stated in the literature, quick commerce is usually associated with smaller assortments (Villa & Monzón, 2021). Besides, according to data gathered in the internship, about 50% of the 500 top-selling products in the online channel are part of the product range offered in these types of stores. The suggestion is to offer an online assortment size of around 1000 SKUs, once this strategy is usually efficient with a basket size surrounding this number (Adhi *et al.*, 2022), and because it impacts both the fulfillment process and inventory levels (Barbee *et al.*, 2022). This way, order preparation times will be achieved, and inventory levels will not need to be as high as if the online and physical assortment size was the same.

By implementing this scenario approach, the company would leverage their existing local store networks, have lower investments, and fast expansion, in order to meet new consumers' demands, thus meeting what is cited in the literature.

#### **4.4.2. Scenario 2**

In contrast with scenario one, this scenario will use stores and transform them into micro hubs. This suggestion was supported by the literature and by the data gathered. One of the interviewees mentioned *"...The ideal is the store to have space and has good location...Regardless of the format, the most important thing is the location and space of the stores" "...one of the factors to have in mind is the space, especially if it has walk-in customers...The space organization becomes very important"*. Adhi *et al.* (2022) presented an option designed for transforming the store into a micro hub. However, this approach is only viable if there is a local store that does not have as much movement as others and therefore could be closed and redesigned, and later open as a micro fulfillment center or dark store. As an example, as explained in table 4.1, from a sample of the overall 34 stores, there is at least one store that has much less weight in total sales percentage, confirming an opportunity to be

restructured. Besides, this scenario can also be implemented when the new delivery option reaches high order levels and justifies the restructuring to cover initial investments (Wollenburg *et al.*, 2018).

The difference between the two scenarios relies on one of them having walk-in customers shopping at the same time as pickers, and the other does not (Hübner *et al.*, 2016; Wollenburg *et al.*, 2018). This way, the risk of out-of-stock is much less due to the non-existing gap between customers' order time and the picking process. Besides, it will also differ in terms of store space and layout, enhancing picking efficiency (Hübner *et al.*, 2016). Thus, leading to the following variables:

**Infrastructure:** The IT system must continue to be precise, as other orders with the same products may be placed at the same time. However, the risk of having walk-in customers to take the last product during the gap time does not exist. Stock availability would become much more accurate (Hübner *et al.* 2016; Wollenburg *et al.*, 2018), thus meeting the literature. In this case, the store layout would become similar to a warehouse, making picking efficiency to increase (Hübner *et al.*, 2016). It is then suggested, that in this case, to introduce electronic shelf tags to increase even more picking efficiency. This way, pickers would know through the system where are products localized and which path is the most efficient.

**Online assortment:** Online assortment would also increase in this approach once every product stored had only online demand. In contrast with the first scenario purposed, instead of just offering 1000 SKUs, it is suggested that all products from the store to become available. This would be possible once store layout would be redesigned, having more space to have higher stock levels.

**Demand planning:** Demand forecasting would also be less complex if it would not consider the physical demand, which will directly influence replenishment fulfillment policy and stock levels.

**Inventory management:** The suggested replenishment policy would not be altered from their current as-is situation. It would only need to be one time per day once there is only one channel to take into account and because it would have more space to keep safety stock to address potential demand fluctuations.

Therefore, transforming one store into a micro fulfillment hub would bring some challenges mainly due to its initial costly investment. However, if this option was implemented it would later increase efficiency and become an advantageous micro fulfillment hub capable of quickly dispatching orders due to its layout characteristics and location.

## Conclusion

### 5.1 Research conclusion

The way consumers buy products are coming to a shift. Enhanced by the new technology, and especially by the pandemic situation, shoppers' profiles are reaching a new level of convenience. Standard deliveries are no longer enough to fulfill their needs. Apart from a wide choice of delivery options, delivery time is increasingly becoming a decisive factor. These changes set a new generation of e-commerce mainly characterized by their fast deliveries.

Grocery retail companies seek to answer consumers' latest needs and to adapt their current operations to operate efficiently in the omnichannel landscape. Especially due to an internship at Auchan Retail Company, in the digital and e-commerce department, it was also identified some gaps that justified this research. Having quicker delivery times and therefore offering a new level of convenience, makes local stores the place to fulfill online orders. However, local store characteristics rises some challenges, thus leading to the purposed research question: "How can a grocery retailer structure their local stores' operations while adopting a ship-from-store fulfillment strategy?".

Through the literature review, it was possible to identify which areas were going to be the most challenging when fulfilling orders from local stores, including demand planning, assortment size, and inventory management. Apart from the results discovered in the literature review chapter, the data gathered during the internship enabled the identification of some opportunities to improve and to suggest implementation plans.

Data analysis led to the finding that the company does not yet fulfill the q-commerce generation. Auchan customers can choose from a diverse set of delivery options, however, the lead times offered are not in line with consumers seeking faster deliveries. Following this opportunity, the fulfillment location was another improvement area identified. The company is currently fulfilling orders from a store that is not as close to customers as its ultra-proximity stores. Apart from their difference in terms of location, the area is also very distinct. Data from non-standard orders enabled to confirm the opportunity to improve, showing online order preparation times very distinct in both types of stores, with higher percentages in larger stores. Along with high preparation times, the current fulfilling location of all standard online orders also presents high percentages of incomplete orders. The data gathered allowed to answer the purposed research question by suggesting two different scenarios.

In the first scenario was purposed to use its network of ultra-proximity stores as the fulfillment location of quick deliveries due to its location. Apart from creating a new location for standard orders, demand planning was also suggested to be adjusted, as well as the basket size available online, which

would be much less than the one currently offered in the online channel. The inventory replenishment policy was also suggested to be slightly altered due to a lack of space for safety stock, and also due to joint offline and online demand. Moreover, a more reliable infrastructure was also suggested to lower the percentage of incomplete orders, which is possible with an IT system capable of offering stock precision. A second scenario was purposed if the number of new instant delivery orders justifies closing one store to redesign into a micro fulfillment to cover initial expenses. In this scenario, the approach was different regarding the store operations variables. Demand planning would only concern online customers and thus become less complex. The online basket would have more references available once the area of the store would only be used to fulfill online consumers, instead of both channels. Its new layout would allow some space for safety stocks, as well as increase the picking process efficiency. Inventory replenishment would also become less complex, and the IT system would continue to need improvement. Serving only online consumers would decrease a lot of incomplete orders, however, the infrastructure behind would need to be precise once different customers could be ordering the same product at the same time.

## **5.2 Research limitations**

One of the limitations of this study relates to the lack of consumer perspective. Despite having data from a similar quick delivery service already offered, studying what consumers expect from this type of service would allow more precise suggestions. For example, knowing what categories of products they expect to have access to, would help to define more precisely which references were going to the online basket.

Furthermore, it was also not possible to identify in which areas concentrates the majority of consumers ordering from the quick delivery service. The available data only allows to have insights on the operational level and does not offer the consumer profile. This information would have helped to decide which stores to target in a future implementation of either purposed scenario.

The third limitation found was not having the results for the purposed scenario. The company intended to implement this service, but it was not possible to accomplish it in time until the finish of the research. Having results would have allowed gaining a perception regarding the viability of the suggestions.

## **5.3 Future research work**

For further research, it would be interesting to have the outcome of either scenario purposed and readjust it to any potential challenges that may arise. Moreover, also having a consumer profile well

detailed to know the proper characteristics needed to fully answer consumers' need for convenience and faster deliveries.



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