



Instituto Superior de Gestão e Administração de Santarém

Mestrado em Gestão de Empresas

Dissertação

COVID-19 e o setor do Retalho: Um estudo de caso em Portugal

COVID-19 and the Retail sector: A case study in Portugal

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Resumo

A pandemia afetou a indústria do retalho e isso exigiu uma nova resposta rápida e eficaz do setor. O objetivo deste trabalho é discutir os impactos e as medidas adotadas pelas empresas sob a influência da COVID-19 no retalho, especialmente à luz das perspetivas económicas, sociais e de saúde. Para tal, realizámos uma revisão sistemática da literatura onde é discutido o estado da arte e dada uma perspetiva holística do fenómeno. Para corroboração dos resultados, foi realizada uma pesquisa empírica através de um estudo de caso qualitativo e exploratório de um operador logístico para melhor descrever os efeitos da pandemia no trabalho diário. Por último, foi realizado um artigo com uma abordagem multi-método que visa compreender e descrever os efeitos da COVID-19 no sector retalhista assim como propor medidas para mitigar os impactos da doença através de uma estratégia de transformação digital. A combinação dos resultados revelou que, perante uma procura inesperada de alguns bens, existiu implementação de medidas de proteção e higiene nas lojas para colaboradores e clientes assim como um ajustamento dos canais de distribuição. O distanciamento físico exacerbou o fenómeno da transformação digital na indústria retalhista ao introduzir inovações tecnológicas. A Era Digital provou ser um crucial aliado dos retalhistas neste combate à pandemia, no entanto ainda existem alguns fatores a terem em conta nesta transformação. Este trabalho tem como objetivo munir os retalhistas para cenários futuros e destaca a adesão de uma estratégia digital pois será um fator decisivo para a sobrevivência das empresas.

Palavras chave: COVID-19; Retalho; Transformação Digital; Estudo de caso; Multi-método.

Abstract

The pandemic affected the retail industry and so a new rapid and effective response was required. This article aims to discuss the impacts and measures adopted by companies under the influence of COVID-19 in retail, especially in the light of economic, social, and health perspectives. To do so, we carried out a systematic literature review where the state-of-the-art is discussed and a holistic perspective of the phenomenon is given. To corroborate the results, we conducted empirical research through a qualitative and exploratory case study of a logistics operator to better describe the effects of the pandemic on daily work. Finally, a paper with a multi-method approach was carried to understand and describe the effects of COVID-19 on the retail sector as well as propose measures to mitigate the impacts of the disease through a digital transformation strategy. The combined results revealed that, in the face of unexpected demand for some goods, there was the implementation of protection and hygiene measures in stores for employees and customers as well as an adjustment of distribution channels. The physical distance has exacerbated the digital transformation phenomenon in the retail industry by introducing technological innovations. The Digital Age has proven to be a crucial ally for retailers in this fight against the pandemic, however, there are still some factors to take into account in this transformation. This paper aims to arm retailers for future scenarios and highlights the adherence to a digital strategy as it will be a decisive factor for business survival.

Keywords: COVID-19, Retail, Digital Transformation, Case Study, Multi-method.

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INTRODUCTION

Contextualization

Amid a Digital Age and with technology gradually taking a relevant place in day-to-day operations, behold, a new coronavirus has come to remind that companies are not yet fully prepared to fight against nature. The pandemic, whose origin is still in discussion between the scientific and political community, has erupted and shaken the world and its economies. The globalization of the economy meant a fast spread of the virus among people, which has meant a sharp increase in the number of people becoming infected in a short time around the world. This unprecedented reality triggered widespread action by the World Health Organization in declaring the new coronavirus a pandemic. Therefore, the state of emergency has been activated to ensure the health and protection of the civilian population to mitigate the virus - SARS-CoV-2. Thus, worldwide economies were forced to slow down and the effects were not only macroeconomic, but also socially and health wise. People living in an environment of fear, uncertainty and mistrust because there are still no answers to the cure of the disease known as COVID-19, while companies had to adapt to this new reality and face the unknown. Retail was undoubtedly one of the key sectors during this process, as the supply of essential goods to the civilian population depended on it. The fear of food scarcity resulted in a high demand of goods by the population and thus required a quick and effective response from the sector. Retailers have defined measures and practices to control the disease in their spaces, from social and physical distance, protective and hygiene improvements, adjustments to distribution and communication channels with a transparent transmission of the message. The claim of social distance and confinement reinforces the increase in digital consumers, which means that companies are forced to introduce new technologies into their operations. Therefore, there is an increase of digital transformation in the retail sector through the need to provide means, such as the use of various digital payment systems and new distribution methods to respond to the new rules of sale and delivery. COVID-19 had a disruptive effect on digital transformation and is now a topic that is being exacerbated by the pandemic, although previously was already considered a demand. Working from home, e-learning, digital strategy, the use of information and communications technologies, artificial intelligence, big data among others, are now an example of technologies and practices that embed the strategy and conduct of companies. The COVID-19 phenomenon changed the paradigm of companies and

reinforced that the new standard will embed sustainable practices that ensure the motivation and safety of its employees without neglecting the level of service provided to the client. Nevertheless, this change is still a long and uphill path, that will have to overcome some factors that are still barriers in the sector, such as: culture, training and leadership. Companies that want to stay in the market, will have to find solutions to overcome those challenges. In the near future investing in a digital strategy will dictate their survival.

In addition to other pandemics that were witnessed throughout history, COVID-19 is being perceived differently because it is happening in a time when the world is interconnected and therefore its impact was faster and on a global scale. The number of infected citizens and deaths is already much higher than many past pandemics, and therefore studying their impacts becomes important to enrich the academic world. The relevance of this research is to show the effects felt in the aforementioned scenario and to display the measures and actions that were taken to fight the virus. The aim of this master thesis is to provide retailers with the greatest possible knowledge so that it can be useful as a guide for current and future pandemics. It is certain that we are in the midst of a global crisis that will take time to pass, and with that emerges a new normal that requires companies to be resilient, flexible, and innovative in the face of new market demands. In difficult times, the empowerment of companies will dictate their survival in the face of adversities like this and therefore study is important to combat the present and design the future through knowledge.

In the existing literature, several impacts of this pandemic on the retail sector were addressed, however, from a consumer perspective. There are timely studies that identified the impact of COVID-19 with regard to purchasing preference, change in consumption habits, massive e-commerce and increase of digital users (Pantano et al., 2020; Tanveer et al., 2020; Wang et al., 2020); however, the retailer's perspective has been neglected. For this reason, it might be relevant to investigate this phenomenon from the retailer's perspective, in order to provide information to companies to prepare an effective and quick response facing with this new context of business.

Problematic and Research Questions

A health crisis has triggered harmful effects on several sectors because, in order to contain the SARS-CoV-2, several closure measures have been required that meant slow down economies. The retail sector experienced several phases: the first of understanding, the

second of adaptation, and the third of reaction. In this context, there have been several unpredictable changes in the sector that have affected the daily management and, consequently, its business models. As COVID-19 is a timely phenomenon, this new situation requires the understanding of its impacts, but also the response of the retail section to survive in this scenario. This context forced an adjustment of the behaviors and attitudes of the civilian population as well as retailers, and so the research issues defined for this study are:

- (1) How is the epidemiological outbreak influencing retail companies?
- (2) What measures are being taken by retailers to prevent the spread of COVID-19?
- (3) What effects were felt on the retail sector during the pandemic?
- (4) What are the needed factors to a digital transformation in the retail sector to compete in scenarios like these?

General and specific goals

COVID-19 is a new event so it is considered an opportunity to study. Being new, it is always relevant to study and focus on the topic that deserve a discussion and research to enrich the academic community with helpful findings to the retail sector. The macro-objective of this study is to fill a possible gap in current literature regarding the influence and impacts of COVID-19 on the retail sector from the retailer's perspective. As mentioned above, existing literature studies focused mainly on the consumer perspective, that is why we considered it relevant to study this topic but from the retailer's perspective because it seems it has been neglected.

To answer the research questions, three articles were published. In the first phase, was carried out a conceptual research that was conducted through the publication of a theoretical article. This first investigation consisted of a systematic literature review, which discussed the state that COVID-19 had influenced the retail sector, and identified several measures and practices adopted by retailers in this scenario. For validation purposes, a second article was published. This second article consisted of a qualitative and exploratory case study in a logistics operator, which aimed to reveal the impacts caused by COVID-19 in the retail sector by using several sources of data collection: semi-structured interviews, official documents, and direct observation. Through the results obtained from the previous article, digital transformation was one of the greatest impacts felt during the pandemic and therefore

this study was given greater emphasis. In order to understand the COVID-19 phenomenon in its real settings, we carried out a multi-method research, which is considered by most researchers (Brewer & Hunter, 2006; Seawright, 2016; Yin, 2018) an adequate strategy to understand a none to little explored phenomenon. To do so, we combined two different methods, namely: a systematic literature review and a case study. The analysis of the data collected allowed to identify the impacts of digital transformation in the retail sector. It also identifies the effects that were felt during the pandemic, the measures and practices that helped to mitigate the spread of SARS-CoV-2. Finally, the result of the third article shown that companies must focus on technological innovations in their business models, manage their distribution channels and strengthen their customer-focused strategy. Although, we highlighted some factors that have to be overtaken by companies to keep up in the market.

The core of this master's thesis includes three chapters. The first chapter presents a systematic literature review; the second chapter presents a case study research; and the third chapter follows a multimethod research. In addition, this masters' thesis also contains a brief introduction, where an overview of the topic is presented, and a conclusion section, where the main findings and suggestions for future research are presented.

CHAPTER I

The Influence of COVID-19 in Retail: A Systematic Literature Review

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Abstract. The objective of this research is to discuss the state-of-the-art with regard to the influence of COVID-19 in retail, especially in the light of the economic, social and health perspectives. To do so, we carried out a systematic literature review, a technique that allows an efficient description of the literature and that made it possible to provide a holistic perspective of the phenomenon through the interpretation of relevant published articles. The results showed the sector had to find new measures to mitigate the effects of coronavirus, ranging from social and physical distance, protection and hygiene measures, adjustments in distribution and communication channels, to the transmission of a clearer messages by retailers. In addition, the digital transformation phenomenon has also been enhanced by this crisis, by using measures aimed at reducing the spread of the coronavirus, such as the use of several digital payment systems and new distribution methods to respond to the new sales and delivery rules. This article reinforces the importance of these measures for a new model of action in the retail sector, in order to respond to the market needs.

Keywords: *COVID-19, Crisis, Digital transformation, Retail, Society, Systematic literature review.*

I.1. Introduction

In the 21st century, and despite the advancement of technology in the current digital age, we believe the world is not really prepared to face disasters, viruses or crisis situations with global effects (Hall et al., 2020). The COVID-19 virus emerges as a warning to societies and economies, as the latter have been affected globally and on a large scale due to their unpreparedness. The current outbreak has spread rapidly across the world and has had negative health, social, political and economic impacts. Countries will have to find new measures, practices and behaviors in order to survive in this new reality (Donthu & Gustafsson, 2020; Hall et al., 2020). Retail was one of the most affected sectors, since, in the short term, was forced to: be more concerned with the safety and health of its employees, support the increased demand for food and consequent pressure on the supply chain, improve hygiene of their physical spaces, better managing your workforce, overburdening their

employees to ensure the livelihood of the civilian population, among other issues (Donthu & Gustafsson, 2020; Li et al., 2020). Studies indicate that pandemics will continue to exist and, therefore, this article aims to understand the consequences that a pandemic outbreak, in this case of COVID-19, had on the retail, with a harmful or beneficial effect. It also intends to serve as a preparation guide to allow a permanent reaction from the sector in these contexts, thus avoiding situations of service closure.

As the pandemic influenced the retail sector, it has become an opportunity to investigate this real-life phenomenon. Notable studies, such as the article by Pantano et al. (2020) has already focused on the consumer's perspective, but has put aside measures taken internally by retailers. That is, academics have investigated the perspective of the external environment, such as the change in consumer and management behavior in the retail sector through the context of the pandemic (Pantano et al., 2020), but have not yet dedicated their research effort to the internal environment, which we identified as a research gap. To fill the identified gap in the literature, we suggest the following research questions (RQ):

RQ1: How is the epidemiological outbreak influencing the retail companies?

RQ2: What measures are being taken by retailers to prevent the spread of the coronavirus?

Based on a preliminary literature review, we present some emerging concepts. In the following section, we present the methodology used in this article and, finally, the results and conclusions based on the systematic review.

I.2. Emerging Concepts

In this section we present an epidemiological description and some of the emerging concepts of COVID-19 and its relation to the retail sector.

1.2.1. Epidemiological summary (COVID-19)

In December 2019, 27 cases were identified in the city of Wuhan (People's Republic of China), which underwent through hospitalization with symptoms of pneumonia of unknown origin. The patients presented symptoms such as cough, fatigue and fever, but others were already in a critical state with severe infections in the lungs. All these patients had in common to have been in a Wuhan market that is known for selling seafood and live animals (Zhang et al., 2020). On January 31, the World Health Organization (WHO) reported 9,826

confirmed deaths worldwide, with 9,720 in China and 106 deaths spread over 19 countries, such as Canada, United States, Japan, France, Italy and Germany (WHO, 2020a). It was then that the WHO, in mid-March, classified coronavirus disease (COVID-19) as a pandemic, a severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), which can cause severe pneumonia and, consequently, death (Lewnard & Lo, 2020; Li et al., 2020; WHO, 2020b). The coronaviruses (CoV) are a family of viruses that infect animals and also humans (Wu et al., 2020). Currently, seven of these viruses are already known and have as effect infections of the respiratory tract (Wu et al., 2020). Three coronaviruses are known to be transmitted to man through an animal or a host: SARS-CoV (2003), MERS-CoV (2012) and SARS-CoV-2 (2019) (Wu et al., 2020). Although this new coronavirus, Severe Acute Respiratory Syndrome (SARS-CoV-2), was first identified in December 2019, in the People's Republic of China (Sistema Nacional de Saúde, 2020), its origin has not yet been fully confirmed; however, scientists have already concluded from laboratory experiments that this virus could not have been genetically manipulated, which leaves aside some insinuations made by the United States of America over the People's Republic of China (Andersen et al., 2020). Mainly, because studies reveal that five of the six residues compared between SARS-CoV and SARS-CoV2 are different, the latter demonstrating a greater affinity with humans, proving to be the result of a natural selection of a human ACE2 (Andersen et al., 2020). The enzyme ACE2 is a protein that allows the virus to infect the human organism, since it is directly linked to the cardiovascular system. Therefore, the transmission of SARS-CoV-2 occurs when this protein (receptor) binds to the virus protein and spreads in the human body, affecting the respiratory system (Zheng et al., 2020). Some scientific studies (Andersen et al., 2020; SNS, 2020) point out two possible origins of the virus: (1) natural selection in an animal host before zoonotic transfer; (2) natural selection in humans after zoonotic transfer. Research results have already been published and reveal that SARS-CoV-2 presents 96% similarity to a bat coronavirus, which could mean the origin of this animal as host (Andersen et al., 2020). However, Malaysian pangolin is also indicated as a possible host, since they are potential transmitters of this type of virus (Wu et al., 2020; Zhang et al., 2020). As for the rate of transmission, recent studies show that people aged 60 and over have a higher risk of acquiring the virus (especially those with hypertension, coronary heart disease or diabetes) and children at lower risk, and even infected children have lighter symptoms (Li et al., 2020; Zhang et al., 2020). It is fundamental to be clairvoyant the origin of the virus in order to control its spread and future outbreaks. SARS-

CoV-2 is mainly transmitted through respiratory droplets and contact, while individual protection measures are currently crucial and essential to mitigate the spread of this new coronavirus. In addition, the vaccine and group immunity are still a distant reality, because, if we know that a significant number of laboratories are trying to develop a potential vaccine so far, on the other hand it is still in testing phase and its effectiveness has not yet been fully proven (Yang & Wang, 2020).

1.2.2. The supply chain management and its relation to COVID-19

This outbreak had an impact on societies, as it has forced many sovereign states to declare the “state of emergency” that restricted freedom of movement to mitigate COVID-19 and relieve health systems. Social distancing has emerged as the new social paradigm and is introduced as the new term in the daily equation. Through an epidemiological context of this scale, the strategy of several countries has been to confine their citizens to minimize social contact, since, allegedly, the greatest danger is still among asymptomatic people, who can transmit the virus without them knowing (Lewnard & Lo, 2020). The ubiquity of this outbreak has installed an environment of uncertainty and fear in the minds of consumers, which has led to a drastic change in consumption patterns, especially for non-perishable goods (Pantano et al., 2020). The increase in demand in a hoarding way was prompted by fear of the effect of the scarcity of some goods and, therefore, most retailers had to rethink their supply chains to avoid the lack of products on the market (Pantano et al., 2020). The supply chain networks suffered a negative impact also due to another challenge imposed by COVID-19 – border restrictions and closure, which affected the global economy. This has limited the compliance with deadlines and storage of some products and reduced economic profitability for some companies in the sector (Fernandes, 2020). In turn, online purchasing options increased which, in a way, also stifled the supply chain that was not prepared for this increase, providing a transformation for both the manager and the consumer (Mollenkopf et al., 2020). The COVID-19 revealed that the concern in retail became first and foremost the safety and health of its employees and customers and, thus, it was necessary to combine welfare and protection tools/strategies/practices to ensure the necessary safety distances for virus control and to avoid new contamination chains (Mollenkopf et al., 2020). The focus of retailers had to be mostly limited to risk minimization through measures such as: management of physical versus online stock flow, hygiene and sanitation throughout the store, control and accounting of customers by physical space, signage of distance brands in

stores, installation of barriers between employees, new payment options to avoid contact between customers and employees (Bove & Benoit, 2020). The hygiene and safety of commercial spaces were also an investment imposed and the challenge of retailers was to spread, through their communication channels, a reassuring message that there was stock of the product in the physical and online stores. This strategy made it possible to control consumer panic and, at the same time, guarantee some stability in the operations of these companies (Fernandes, 2020).

I.3. Methodology

This article follows a systematic literature review, since it gathers relevant studies from the literature through its identification, selection and analysis, in a systematic way (Petticrew & Roberts, 2006). This method is very useful for objectifying answers the research questions, since it gathers several studies in the existing literature and, after the delimitation resulting from the critical analysis of these studies, it allows to arrive at evidence that can be reproductive and globally estimated (Cordeiro et al., 2007; Petticrew & Roberts, 2006).

In order to reach a greater consensus on the subject, we combined two types of analysis: a quantitative and a qualitative one. The quantitative approach is based on a bibliometric analysis, since we explore the data from the selected literature on the subject; while, the qualitative approach, is based on a content analysis in a systematic way that facilitates the mapping of the main concepts and their reproducibility (Cheng et al., 2018; Petticrew & Roberts, 2006). Table 1 summarizes the research methodology.

Table 1. *Research methodology.*

Approach	Description	Content
Quantitative approach	Bibliometric analysis	Distribution per journal, per country, and per research area
Qualitative approach	Content analysis of the selected articles	Discuss the state-of-the-art and to find the measures taken by retails to deal with COVID-19

The data search was conducted on October 7th, 2020, and the selected peer-reviewed database was Scopus, Elsevier. We started with the inclusion criteria by using “Retail” and “COVID-19” terms in the topic (title, abstract and keywords). The type of documents selected apply exclusively to journal articles, because they have greater scientific credibility when compared with other types of documents, but also because this source is commonly used in systematic literature reviews (Table 2).

Table 2. *Systematic Literature Review Process.*

Institute for Scientific Information – Web of Science		
Criteria	Filters	Documents
Selected keyword	“Retail” AND “COVID-19”	
Restriction	Topic (Title, Abstract, Author Keywords)	83
Document type	Journal Articles	69
Language	English	67

The journal articles are entirely dated to 2020, since the origin of the pandemic occurred only this year. To avoid wrong interpretations, the selected documents had to be written in English. The systematic review literature may be limited by the fact that the studies are very recent, which may result from some lack of theoretical robustness. The study also presents a snapshot over this period of time, and it is likely that new evidence will strengthen the results of this article or stimulate discussion by presenting data that will prove the contrary. Nevertheless, the relevance of the study seems to be evident as a means to understand a current phenomenon and for which little is known. From a total of 83 manuscripts, we ended up with 67 articles, which we analyzed and presented the results in the next section.

I.4. Findings

I.4.1. Quantitative analysis

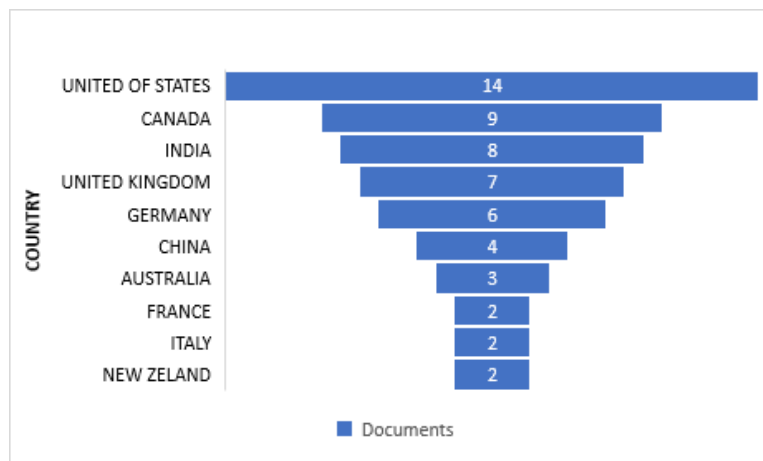
As we mentioned before, COVID-19 is a theme that has been recently discussed in the academic community, thus, we have made an analysis of the selected articles according their distribution: by journal, its quality (quartile) and the citations reported in Scopus' database.

Table 3. *Distribution per journal.*

Top 5 Journals	Citations	Quartile	% of 67
Canadian Journal of Agricultural Economics	37	Q2	55%
Research in Social and Administrative Pharmacy	11	Q1	16%
International Journal of Environmental Research and Public Health	7	Q2	10%
Journal of Business Research	6	Q1	9%
Continuum (Minneapolis, Minn.)	6	-	9%

As it is shown in Table 3, the Canadian Journal of Agricultural Economics (CJAE) is the most frequently cited journal to date (55%). In that regard, the CJAE represents more than half of the articles, since it directly deals with supplies/retail, namely, the food sector. Overall, most of the publications are from first-rate journals due to the interest in meeting economic and social needs and which, in addition to contributing to the theory, also affects the way professionals manage their businesses and which will end up affecting people's lives. Most specifically, as the articles are located in quartiles Q1 and Q2, it indicates that they are a reliable source of evidence. We have also explored the distribution of documents per country, as we can see in Figure 1:

Figure 1. *Distribution per countries (Top 10).*

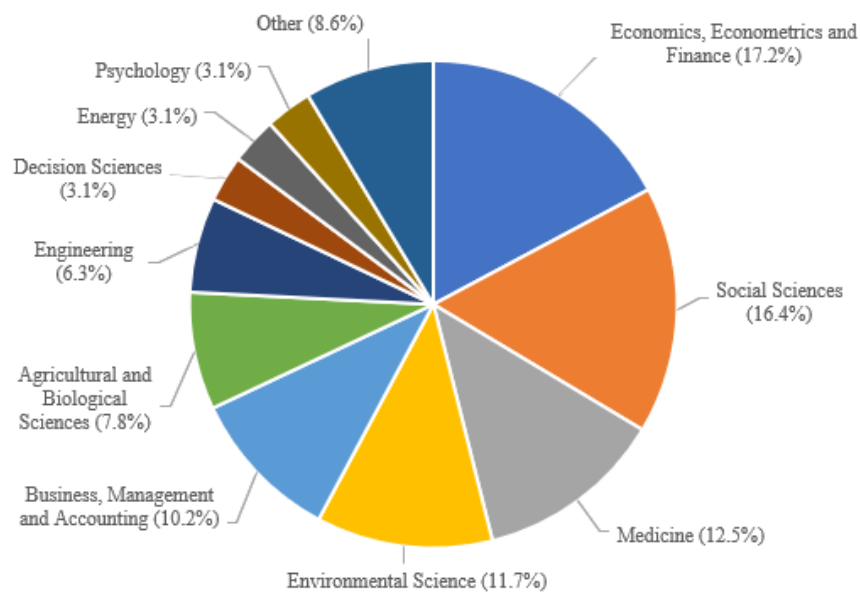


Source: Scopus, Elsevier.

The identified articles mostly evoke studies on the United States of America, as it is somewhat evident that the largest economy in the world has a strong research relationship on COVID-19, enhanced mainly by its negative effects on GDP and also on the workforce that was forced to suspend some of its activities due to the effects of the quarantine (Fernandes, 2020). Canada ranks second place and most of its studies are on the impact of the virus on one of its main economic activities - the primary agricultural sector (mostly grains and oilseeds) – which, in turn, has the United States of America as the largest exporter of these products and, therefore, both share this ranking for their trade and economic relations. Some research also shows that blocking borders and restricted goods transport between countries have resulted in a global concern: food shortages and price inflation of some food products in those countries (Mollenkopf et al., 2020).

We also did an analysis regarding the distribution of documents by research area, as illustrated in Figure 2:

Figure 2. *Distribution per research area (subject research).*



Source: Scopus Scopus, Elsevier.

On a global scale, the effect of COVID-19 was twofold, as it slowed the growth of developed economies and worsened the performance of emerging. Consequently, the economic effect has been cross-border to the world and thus it is no wonder that the vast

majority of studies focus on surveying the economic impacts on countries; it is followed by the social sciences studies, which mainly focus on consumer behavior and social distancing; finally, medicine also occupies a relevant percentage due to the genesis and development of the virus.

1.4.2. Qualitative analysis

In order to answer the research questions, we identified some categories that encompass the main challenges that the retail sector had to overcome, in order to mitigate the virus effects, both in the present and in the future.

Due to the limited number of pages available for publication, it was not possible to list every author's names for each identified measure. To mitigate that limitation, we decided to use percentages, which represents the number of articles that refer to a certain measure and the percentage of that measure over the total number of published articles, as shown in Table 4. The measures identified are common to all identified countries.

Table 4. *Measures taken by retails.*

Themes	Articles	% of 67
Social and physical distancing	8	12%
Protection and hygiene measures for employees and customers	3	4%
Changes in consumption habits	15	22%
Adjustment of distribution channels	4	6%
Ecommerce/Automatization/Artificial Intelligence	5	7%
Use of communication channels, as a strategy to spread the message	2	3%

The most commonly used measure to mitigate COVID-19 was social distancing. The adoption of this measure by individuals reveals a sign of altruism, since, with a minimum of 1.5 meters to 2 meters, allows a control of the non-dissemination of involuntary outbreaks (Huynh, 2020; Mejia & Hernandez-Vargas, 2020). However, this measure forced retailers to invest in business support practices and rules. That required redefining the layout of stores, such as the maximum number of people per space, the reduction of opening hours, the placement of signage in static or dynamic spaces (entrance and exit), sanitizers, and displays

and acrylic protection barriers (Cohen et al., 2020; Martin-Neuninger & Ruby, 2020). If on the one hand, retailers were forced to invest in these individual protection measures and their spaces to subsist in the sector, on the other hand, they witnessed a food hoarding demand caused by fear and uncertainty in food shortages that imposed hourly overload, greater exposure to risk and the allocation of more human capital (Hailu, 2020). Thus, the retail sector has seen a change in consumption habits, especially in food categories, that is, an increase in demand for groceries. Previously, these goods did not have a significant share in household income; however, the aforementioned demand is mainly explained due to its long lifetime (Pantano et al., 2020). Product categories, such as: personal hygiene, kitchen products, packaged foods and toilet paper, experienced an increase in demand at the expense of perishable products (i.e., yogurt, cookies, meat and fish) (Rude, 2020; Shetty et al., 2020). The economic factor (income) also started to influence the purchase act, both in quantity and quality of the good and the purchase at more competitive prices in substitute products become an option (Gupta et al., 2020).

In order to guarantee products on supermarket shelves and meet the needs of the civilian population, it is important to redefine supply chains to meet the sudden demand. But also, the distribution channels, which are directly affected by the closure of borders and are unable to deliver the products in time to stores (Gray, 2020). The effect of food scarcity can lead to panic in the purchase of non-perishable goods, as government policies announce the blockade between the borders of some countries, and which mainly affect the food and agricultural sector (Brewin, 2020). Home deliveries have become the most convenient and safe option for consumers, since food services were forced to close during the quarantine period (Richards & Rickard, 2020).

The coronavirus has also accelerated digital transformation in the retail sector by replacing electronic payments over cash and e-commerce (Goddard, 2020; Kraenzlin et al., 2020). One example is the 5G technology that assists in the identification, tracking, distribution of goods to the final customer (Blit, 2020; Siriwardhana et al., 2020). More and more the investment on automation, e-commerce and artificial intelligence should succeed in the investment plans of retail companies, because the future will probably hang for users, who privilege this type of faster, more comfortable and safer alternatives (Hailu, 2020; Kumar et al., 2020).

In the retail sector there is an interdependence between stakeholders and, in an epidemiological context, the flexibility in the relationships of these parties is crucial for an effective response (Bretas & Alon, 2020). In times of crisis, retailers may have taken on an opportunistic role, to inflate prices of goods, with higher demand, and oligopolistic behavior has emerged through a break in the supply chain, by holding greater market power. As a result, retailers who showed greater flexibility with their stakeholders through ceding and efficient management in the chain became more successful and avoided product breakdowns (Ihle et al., 2020).

Nowadays communication, regardless of format, comes to us in a fast, accessible and rough way. In times of pandemic crisis, the media have invaded our homes with alarming news about the coronavirus, although with some uncertainties, they have undermined the minds of the populations with a tragic and frightening countenance that has globally fostered an environment of insecurity, fear and uncertainty. That is why retailers should be more cautious about the product availability on the market. To avoid panic buying and hoarding non-essential products, the decision to communicate and spread a clear and reassuring message about the availability of the products is a priority. On the other hand, it allows retailers to maintain and strengthen the loyalty of their current customers and to capture new customers, who value factors such as safety, hygiene and product availability in a retail store (Katrakazas et al., 2020; Pantano et al., 2020; Wang et al., 2020).

In the following section, we present the conclusions, which summarizes the most relevant findings by presenting the contributions to theory and practice, and suggestions for future research.

1.5. Concluding remarks

Although COVID-19 has caused an unprecedented crisis, retailers must take into account a number of shortcomings already identified and find strategies to mitigate its future effects. In times of pandemic, the retail sector suffered severe economic, social and health measures; however, from these scenarios, several opportunities may arise and the retail sector must take this into account when defining a future and sustainable strategy. Change and resilience are key success factors for survival and competitiveness in the retail sector.

Due to COVID-19 there was a change in consumption habits, due to fear and uncertainty. The quarantine has leveraged online commerce and online product sales, groceries

increased, and the stores were redefined in their layout with protection and hygiene measures. As we had the opportunity to identify in most of the published articles, Retail is considered one of the most essential sectors, reinforced by the fact that its workforce is vital to avoid food shortages. In light of the above, one of key recommendations to retail managers is to continue investing in safety and health measures, because the human capital will lead the fight against the pandemic with uncertain terms.

In addition, digital transformation has allowed for a faster evolution, because physical contact was quickly identified as a danger and, in this regard, technologies were considered essential tools for the continuity of the retail commerce, whether through electronic payments, product tracking, online orders and delivery forecasts.

The communication between retailers, employees and stakeholders should be also clear and the message must convey security and trust, as it will be on those bases that the customer will return to stores after the pandemic. The relationship between all stakeholders will mobilize flexible efforts with benefits for all, culminating in a smooth delivery to the last mile customer.

As this article builds on a systematic review of the existing literature, it should be interesting to conduct an empirical research on the retail industry to validate our findings. Another issue that deserves to be investigated is the continued implementation of rules and new practices to mitigate COVID-19 effects, which, due to the effect of lassitude, the lack of implementation of control rules can have negative implications on productivity, motivation and well-being of the retail workforce.

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CHAPTER II

Impacts of COVID-19 in Retail: A Case Study Research

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Abstract — The objective of this research is to discuss the possible impacts and mitigation measures that emerged in the retail sector during the COVID-19 pandemic. Through a qualitative and exploratory case study of a Portuguese logistic operator, we explored the effects of the pandemic on employees' daily work, both at departmental and organizational levels. Through semi-structured interviews, analysis of official documents and direct observation, the results showed several measures and practices adopted in the pandemic context, such as: the use of telework; adoption of additional protection and hygiene measures for employees and customers; adoption of measures to mitigate the effects of increased demand for canned goods, hygiene and cleaning products, and tobacco; development of policies that enhance digital transformation; and the use of active and preventive communication strategies. Of all the adopted measures, we highlight the digital transformation one, due to its potential positive impact in allowing the return of a new normal, largely due the possibility of using innovative technologies that allowed remote work in practically all departments of the organization. This change also brought a paradigm shift, as it allowed to build new beliefs regarding the positive impact of teleworking and other opportunities for remote work, without significantly changing the expected service levels. Thus, this article contributes to the awareness of the measures and practices adopted by retailers in Portugal, without neglecting the safety and efficiency of labor practices.

Keywords – COVID-19; retail; case study research; digital transformation.

II.1. Introduction

While the outbreak of COVID-19 is revolutionizing societies, concerns are arising over successive declarations of state of public emergency worldwide, which promote: concerns about food shortages, uncertain prognoses about the disease, social distancing, restriction of people's freedom, closure of schools and businesses, teleworking, and the long-awaited vaccine that is still being distributed (Fauci et al., 2020; Pfefferbaum & North, 2020). While several sectors were impacted by the virus, Retail was no exception. Thus, the alarmism

triggered by this global threat generated an unexpected demand for food, with consumers forced to change their purchasing habits through the new procedures and rules imposed by health entities (Sheth, 2020).

This new coronavirus, SARS-CoV-2, was a global shock to humanity, as nations are now forced to adapt quickly and flexibly to circumstances, so that their citizens can return to the old pre- COVID-19 lifestyle (Wagner, 2020). The biggest known change resulted in the use of the surgical masks as a protective shield, being mandatory for the circulation of people in many countries around the world. The buying habits are also being adjusted with the purpose of avoiding long queues in supermarkets, while consumers' disposable income is being directed towards other types of goods. Retail ended up being one of the least affected sectors, with regard to spending, since its customers continued to consume. However, retailers were not entirely immune to the changes brought about by COVID-19, given the sudden demand for some goods that unexpectedly became more frequent consumption habits, made them more difficult to manage (Cranfield, 2020; Jung et al., 2020; Laato et al., 2020; Shetty et al., 2020).

From the existing literature, we identified several studies that focused on the theme of our article (Pantano et al., 2020; Tanveer et al., 2020; Wang et al., 2020), but the mentioned articles focus on consumer perspective, when explaining the changes in purchasing behaviors. Therefore, it might be relevant to develop the retailer's perspective. In that regard, Lopes and Reis (2021) firstly carried out a theoretical research, which aimed to identify several measures that are being taken in the retail sector during the COVID-19 pandemic. The same authors also identified the need to develop empirical research to validate their findings, which is the goal of this article.

The next section follows key concepts and ideas based on the existing literature, then, we present the methodology used, followed by the results and, finally, the conclusion.

II.2. Literature Review

The disease caused by the new coronavirus, is currently shaking the global economy that due to globalization the impacts of COVID-19 ended up quickly transcending the borders of virtually all countries (McKibbin & Fernando, 2021). Affected countries were forced to take urgent measures to mitigate health crisis caused by COVID-19, measures that led societies to reinvent themselves in new ways of being, living, working and buying products (Huynh,

2020). One of the most important measures for controlling the spread of the virus, which was cross-cut and guided by the World Health Organization (WHO), was social and physical distance (Andersen, 2020; WHO, 2020c). This measure was adopted by almost all sectors and retail was no exception. So, retailers quickly took new measures to ensure the safe operation of their stores, such as: reorganizing the store layout; reduced working hours; limit the number of people inside-store; guidelines for directing traffic; control of employees per shift and distance bands for customers in queues (Hernandez-Mejia & Hernandez-Vargas, 2020; Wang et al., 2020). Not less important, were the protection and hygiene measures for employees and customers. Measures that emerged as an unexpected investment for the retail sector, in this regard, the use of protective masks, acrylic barriers, hand sanitizers and periodic disinfection of the workplace have become imposed habits in order to guarantee the protection, hygiene and safety of all, whether customers or employees, in public or private places to mitigate and control the proliferation of the virus (Ntounis et al., 2020).

The pandemic scenario scared people. While people suddenly started looking for basic products, their attitude resulted in long lines at supermarkets for fear of food shortages, as governments around the world have established mandatory feedlots (Hall et al., 2020; Laato et al., 2020; Pantano et al., 2020). The distribution channels have been crucial to allow supply stores and guarantee enough goods on the shelves, and for that purpose they had to readjust themselves through home deliveries by their own transport fleets, so that goods could reach all consumers (Hailu, 2020; Richards & Rickard, 2020).

Worldwide, COVID-19 had been pointed out as one the cause of digital acceleration, as companies were forced to work online to avoid physical contact between employees at their workplaces, so a good example is provided by universities that had to close and adopt e-learning strategies (Blit, 2020; Siriwardhana et al., 2020). E-commerce is also being used more frequently, instead of physical purchase, as consumers avoid going to stores out of fear and uncertainty about the virus, but also because for some periods of time they were forbidden to leave home with same frequency as the past (Bretas & Alon, 2020). In addition, cash payments have also been replaced by digital payment methods (Contactless), which has forced the retail sector to adapt quickly to the new digital methods, means that lately have been privileged mainly by teenagers (Kraenzlin et al., 2020). Artificial Intelligence also occupied a prominent place in the replacement of human labor and, at this point, it has been

of great help in maintaining the production and profit of companies even if their employees remain in telework (Blit, 2020).

II.3. Methodology

This article follows a qualitative and exploratory case study research. This option is justified by the need to understand behaviors and reactions in the configuration of a real-life phenomenon, but also because, to the best of our knowledge, this is the first known academic approach on this specific topic (Patton, 2005; Yin, 2003; Yin, 2015). The study was carried out at a logistics operator in Lisbon – Portugal, and brought together multiple sources of data collection for triangulation and corroboration purposes.

During the COVID-19 pandemic, the retail sector was one of the most affected sectors, due to mandatory confinements in several countries. At the same time, logistic operators were unable to stop as they played a key role in the sustainability of retail business, from cost efficiency to organizational integration. Therefore, within the retail sector, we chose to study the processes of a logistic operator, so that we could better describe the measures that were intended to mitigate the spread of SARS-CoV-2 upstream.

This study reports on the analysis of 10 semi-structured interviews with employees at different levels of responsibility and operational areas; it also includes the analysis of 4 official documents, mainly collected from the official website; and also evidences from direct observations, collected during the site visits. In order to obtain plurality in the information from the interviews, we selected 2 employees from each department and from 5 different areas, such as: Customer Service, Transports, Operations, Commercial and Quality, Health and Safety. A socio-demographic analysis revealed that most employees' age ranges from 29 to 43 and are mostly female (60%). We considered highly qualified employees and knowledgeable about the entire logistical process, since the interview protocol also requires an in-depth knowledge of the organization. Table 1 shows more details about the employees interviewed.

Table 5. Interviewees' details.

Level of Responsibility	Area	Employees	Years of Experience (average)
Coordinator	Quality, Health and Safety	2	12
Director/Manager	Costumer Service	2	22
Director/Manager	Transport	2	6
Director/Manager	Operations	2	1
Manager	Commercial	2	14

We halt conducting interviews when we stop receiving new and relevant information, which means that we have reached theoretical saturation (Saunders & Townsend, 2016). An interview script (Appendix A1) was presented to each interviewee about its form and content, and all interviews were recorded with the appropriate consent. The data were analyzed according to the content analysis technique, in order to allow the reproducibility of the main concepts, which allowed to identify the most relevant categories and patterns (Petticrew & Roberts, 2006).

II.4. Findings

Through the analysis of all interviews, it was possible to ascertain the categories about the effects of COVID-19, which resulted in changes in the daily workforce, these are:

a) Teleworking

Teleworking was one of the measures adopted by the organization, for all workstations that could be operated remotely. The Portuguese Government has been encouraging companies to quickly adopt teleworking, in order to reduce contact between professionals, and to protect employees who can do so. In general, we were able to verify that logistic operators followed the governmental recommendations and provided for this the necessary technological infrastructures to guarantee work from home, thus fulfilling the physical distance. Organizational compliance with state recommendations made it possible to

safeguard the health of the logistics operator's employees, so skepticism or the belief that teleworking was a practice associated with more intellectual work quickly vanished. This paradigm shift occurs because companies are beginning to realize that teleworking is effective, especially in environments that require it (e.g., pandemic setting) (Belzunegui-Eraso & Erro-Garcés, 2020).

b) Protection and hygiene measures for employees and customers

In the COVID-19 scenario, the objective of the logistic operator has been to control a possible spread of SARS-CoV-2 and to ensure the safeguard of logistics teams in the field. In that regard, several practices have been adopted for employees and customers, such as: mandatory use of masks; frequent use of disinfectants; limited circulation; temperature control; incorporation of physical barriers (acrylic barriers and introduction of signals) and periodic disinfection of the warehouse. Moreover, in order to avoid outbreaks between teams, there was regulation on shifts, which means that the entry and exit times between them were delayed, as well as the definition of "alternate teams" (i.e. 50% of the group's workforce is physically in the company, while the other 50% of the group in telework) so that, in case of contamination, there were backups that ensured all functions in the absence of infected employees.

The logistics operator also created a Contingency Committee, which consisted of a multidisciplinary team that highlighted all the measures to be taken in various scenarios and the identification of a person responsible for each area, for follow-up and action. Periodic visits by area managers were also defined to monitor compliance with the measures by all the employees, in order to strengthen knowledge of good practices and ensure the protection and health of logistics teams.

Customers were often confronted with the measures that were taken over time and were also warned to reduce visits to the logistical operator's warehouse, having been recommended to use telephone contacts or use digital platforms. In urgent cases, in which customers were unable to delay the visit or use alternative means, the measures required of employees are also the practices required from customers to guarantee the safe functioning of the logistics activity, without prejudice to the level of service provided.

c) Increased demand for goods – pharmaceuticals, cleaning products, canned goods and tobacco

As the logistic operator has a pharmaceutical business unit, it is worth mentioning that at the beginning of the pandemic, the sudden search for medicines to supply pharmacies and hospitals was notorious. Although the Portuguese Government has encouraged hospitals to increase the stock of some medicines, due to a possible flow of patients to hospitals, also the alarmism caused by the increase in COVID-19 cases has caused an environment of fear among consumers and this has also increased the demand for this type of goods. This demand has impacted the daily work routine, which caused overload due to the sudden increase in the volume of orders.

Over time, the confinement required to all citizens and the temporary closure of some sectors, also caused changes in the consumption habits. Demand has shifted to other type of goods than just basic needs, such as cleaning products, canned goods and tobacco, just to name a few. If on the one hand it was necessary to invest in large quantities of cleaning products by companies to disinfection workstations, on the other hand, the first confinement in Portugal (mid-March 2020) also forced consumers to look for more durable goods in large quantities. The influx in the purchase of tobacco was also one of the realities felt in the logistics operator, a context that is directly linked to the confinement, partially explained because people have more time to smoke, but also because the pandemic environment caused stress, fear and distrust that led to a higher frequency of smoking (Cattaruzza et al., 2020).

d) Massive IT adoption

The fast-spreading COVID-19 disease, which has claimed thousands of victims worldwide, has also accelerated the digital transformation in organizations. As it increased the need to use tools such as telework, having already been pointed out as a phenomenon in exponential expansion. Digital platforms have come to occupy an even more relevant place in the way companies communicate (from the inside out and vice versa), as well as the acceptance and adaptation to these technologies have become manifestly positive. Tools such as Microsoft Teams, Skype, Zoom, are currently seen as an indispensable utility for communicating, managing and working. In the short term, the logistics operator begins to realize that the possibility of a hybrid model between these teams is really possible and can be taken as a future scenario.

Customers also had to adapt to this new way of interacting with companies and, despite the lack of physical and social contact, they remained equally receptive to the use of new digital platforms. The results have been very interesting, as they show that these tolls require less time spent on meetings and a greater focus on problem solving, positively affecting the cost support that a normal visit entailed.

The mass adoption of IT was considered one of the most radical measures during the context of the pandemic, all interviewees revealed that this measure will likely to revert to a new culture and mentality in relation to work and organizational results.

e) Active and preventive communication strategy inside and outside the organization

Since the beginning of the pandemic, the logistic operator considered that the success of the organization was directly linked to a strong communication strategy. This meant that the organization decided to periodically share all the measures taken with employees and customers, and their respective adjustments over time. This dynamic information sharing with employees and customers was perhaps the most appropriate strategy to keep customers satisfied with the performance level of the logistic operator and we believe that it may even have attracted new customers.

The shared message was one of trust, security and motivation. More than ever, employees were the organization's main resource, without them it would not be possible to supply products to retailers. Customers began to share messages of encouragement and reinforced their belief in the work of the logistics operator. These messages were posted on a wall to be shared with the logistics operator's employees as a way of thanking them for their effort and work during the pandemic period.

Protection and hygiene measures have not been neglected over time, and the logistics operator has even reinforced them through on-the-job training, brochures and guidelines in the warehouse. It should also be noted that the so-called "Preventive Minute" was adopted, which consisted of an audible message about the importance of hygiene and the rules of distance between employees.

The Contingency Plan was often shared, inside and outside the organization, with the level of absenteeism and the corrective measures to be taken by the logistic operator. Social networks were also a useful platform for sharing information and involving employees,

customers and competitors. So, it was essential to adopt an active and preventive communication strategy that would promote a safe, protected and confident environment, with the ability to stimulate business continuity.

II.5. Conclusions

As the pandemic generated an unprecedented crisis, shaking several sectors, including Retail; the economic, social and health effects had an impact on daily work. Through a case study of a logistics operator, it was possible to identify, measures and ascertain categories of impacts at various levels of the organization. The measures throughout the organization were protection and hygiene for employees and customers, since the real fear is the spread of the virus from person-to-person. The retailers' social and economic role has been to certify the health of employees, by ensuring the availability of goods on the shelves. Of all the effects mentioned in the article, we highlight the digital transformation acceleration, although it was an imposition to quickly stop the spread of the virus, it has now become an organizational practice. The employees, regardless of their hierarchical level in the organization and department, identified that the pandemic was a lever for the emergence of a new mentality regarding the use of information technologies. Thus, the belief that teleworking would only serve intellectual organizations quickly fell apart and became a new method of work that is likely to be used more often.

In the literature, we noticed that the subject was approached mainly from a consumer's perspective, so, in a way, the retailer's perspective was being neglected. This article therefore sheds some light on the subject, as retailers must be aware of the challenges that are common to all companies. In this regard, retailers may consider some of the information in this article that can provide them with measures and practices that enable greater competitiveness and security.

Since the case study was carried out in Portugal, it would be important to understand its reproducibility in other retail companies based in other countries. In addition, while this research has an exploratory nature, we hope that it will be a preponderant factor to encourage possible discussion and future research on the topic, which can broaden and enrich the topic of study. However, we must not forget that this study analyzes the effects of a pandemic that may not occur again or in the short term, nor under the same circumstances and therefore the validation of this research in the future may be limited. The design of a conceptual model

on the effects of the pandemic on retail could also be a suggestion for future research, taking into account some inputs already addressed in this paper.

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CHAPTER III

Towards Digital Transformation: A Multi-method research to identify and mitigate the effects of COVID-19 in the Retail Industry

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Abstract: The COVID-19 pandemic had social and economic effects in all industries, retail was no exception. However, the Digital Era came to contribute so that retailers could respond quickly to the needs of customers, being essential in combating the pandemic. Using a multi-method research, this article aims to demonstrate how retailers have used the digital transformation to mitigate the negative effects of COVID-19. First, the results show that retailers had to focus on technological innovations, adapt their business models, manage their distribution channels and strengthen their customer-focused strategy. Second, it is necessary to emphasize that while smart retail is gradually standing out in the sector, there are also some factors that have not been overcome, such as: lack of digital culture, training and digital leadership. Despite these identified difficulties, the adoption of a digital strategy will allow a differentiating, safe and secure shopping experience, which today is one of the decisive factors for the survival of companies.

Keywords: *COVID-19; digital transformation; multi-method research; retail.*

III.1. Introduction

In mid-March 2020, the World Health Organization (WHO) classified the new Coronavirus Disease (COVID-19) as a pandemic due to the alarming number of cases and infections. The infectious diseases caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) quickly became a global public health challenge (Pachetti et al., 2020; Rothan & Byrareddy, 2020). As it spread, the disease revealed its damaging effects on global economies and markets (Andersen et al., 2020; WHO, 2020b; WHO, 2020d). In this regard, countries have enacted a series of mandatory control measures for the population, in order to prevent further dissemination. In turn, the industrial sector was also forced to interrupt production lines, reduce human resources or even close their physical facilities (Douglas et al., 2020). While people were forced into confinement and deprivation of liberty,

the retail sector was one of the few sectors that had to secure products and goods for citizens' livelihood (Goddard, 2020).

In an early stage of spreading SARS-CoV-2, which caused an environment of fear and uncertainty, consumers shifted their demand to other types of goods (e.g., non-perishable goods). In light of the above, retailers struggled to obtain all the necessary resources due to the unusual quantities of products that were purchased (Hall et al., 2020; Laato et al., 2020; Tanveer et al., 2020). Retailers also started to adopt new measures, such as: 1) additional forms of payment, to avoid physical contact; 2) teleworking, to ensure indoor social distance; 3) the use of new digital channels, to allow access to organizations from home (Bartsch et al., 2020; Hernandez-Mejia & Hernandez-Vargas, 2020; Končar et al., 2020; Ntounis et al., 2020) among many other aspects. The employees in the retail sector also found new risk factors, such as: overtime pressure and increased workload, use of additional personal protective equipment and frequent stops for hygiene (Douglas et al., 2020; Hernandez-Mejia & Hernandez-Vargas, 2020; Shahbaz et al., 2020). In this regard, retailers and logisticians were forced to adopt additional occupational health and safety measures to avoid environments of stress, danger and burnout (Douglas et al., 2020; Luceño-Moreno et al., 2020). It was in this context that digital and disruptive technologies came to contribute to a better adaptation of companies to the phenomenon of COVID-19.

In the literature, there are some studies that have discussed this topic from the consumer perspective. They revealed that the pandemic caused new consumption habits, a change in the demand for goods, market behavior and the economic effects of these changes on companies (Pantano et al., 2020; Tanveer et al., 2020; Wang et al., 2020). However, the perspective of professionals who operate in retail and logistics areas is somewhat forgotten. To fill that gap in the literature, we developed the following research question: How is the digital transformation contributing to mitigate the effects of COVID-19 on the retail industry?

Thus, this article is twofold, since it aims to understand and describe the effects of COVID-19 in the retail sector and, on the other hand, propose measures to mitigate the impacts of the disease through a digital transformation strategy. The article is organized as follows: section two describes the methodological process; section three reports the results of the research and includes a brief discussion. The final section presents the theoretical and

managerial contributions of the research, as well as the research limitations and suggestions for future studies.

III.2. Methodology

This article follows a qualitative multi-method research, since it involves the combination of two data-collection and data-analysis methods (Seawright, 2016). The use of both methods makes it possible to complement each other, in order to generate a broader understanding, as it does not limit research through a particular research strategy (Stange et al., 2006). Therefore, the multi-method research allows for a greater understanding of human behavior in real-life narratives and scenarios, while improving reproducibility (Yin, 2018). In addition, the diversity of methods also provides richer results that allow cross-checking and validation to build a stronger theory (Brewer & Hunter, 2006).

Following the previous arguments, we combined the use of two qualitative methods, namely: a systematic literature review and a case study. If, on the one hand, the systematic review allows to guarantee the reproducibility and transferability of knowledge (Petticrew & Roberts, 2006); on the other hand, the case study provides an understanding of the phenomenon, whose approach is still scarce, creating an opportunity to be empirically explored (Yin, 2018). In this research, complementarity is achieved since the systematic review makes it possible to study the state-of-the-art with regard to digital transformation and its effects on retail. The case study enabled researchers to carry out an analysis from an empirical perspective, confirming or refuting the data previously collected in the literature review, as well as understanding the impacts and mitigation measures for COVID-19 that were not yet identified in the literature.

III.2.1. Method 1: Systematic literature review

For the systematic review, we used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The PRISMA statement consists of a checklist of 27 items and a flowchart with four phases (Identification, Screening, Eligibility and Included) (Liberati et al., 2009) and is often used to improve reporting of systematic literature reviews and meta-analyses (Moher et al., 2009). Thus, this research method allowed researchers to select the inclusion and exclusion criteria in order to guarantee a selection of the documents with the greatest criteria.

The search for data was carried out on February 21st, 2021, and the search process was undertaken in Elsevier’s Scopus. This choice is justified because Scopus is considered as one of the largest databases that contains peer-reviewed scientific journals. For research domain of natural and social sciences Scopus is more adequate when compared to the Web of Science or the Google Scholar (Mongeon & Paul-Hus, 2016; Falagas et al., 2008). Although it is a paid access database, Scopus allows researchers to refine the search (i.e., authors, date, type of documents, date, thematic area, etc.) and is the most recommended when it comes to analyzing citations in the academic community (Harzing & Alakangas, 2016). In addition, we do not use Google Scholar as a scientific search engine because it contains documents that have not been peer-reviewed and, therefore, tend to be seen as of questionable quality (Falagas et al., 2008). Our selection criteria started by choosing the terms “Retail” and “Digital Transformation” in the topic (title, abstract and keywords). Regarding the type of document, we only excluded conference reviews, scientific reviews and conference notes, because we consider journal articles to be of superior quality. To avoid misinterpretation, only documents in English were selected. There was no time restriction, as the theme of COVID-19 is very recent. In addition to the language and type of documents, we also excluded 18 documents from our research, as 16 of these documents were not available for consultation and the other documents corresponded to books, whose access is paid. Although we had access to all other documents and met all the previous criteria, we resorted to the elimination of 4 of them, since the topics did not correspond to the research topic. From a total of 98 manuscripts, and considering the PRISMA protocol, we reached 60 documents, as shown in Table 6.

Table 6. *Four phases and criteria of the PRISMA protocol.*

SCOPUS	<i>n</i>
Identification	
“Retail” AND “Digital Transformation”	
Title, Abstract, Keywords	98
Screening	
Language (English)	92
Article, Conference Paper, Book Chapter, Book	82
Inaccessibility (document unavailability)	22
Eligibility	
Full-text	60
Included	
Non-included articles	60

Within the scope of the systematic review, two types of analysis were performed. First, a bibliometric analysis was carried out that took into account the graphical data obtained directly by Scopus, such as the distribution by country, thematic area, type of document and year. Second, the content analysis of the 60 manuscripts was carried out, which made it possible to identify the extent to which the digital transformation allowed to mitigate the effects of COVID-19 in the retail industry.

III.2.2. Method 2: Case study research

This research also follows a qualitative, descriptive and exploratory case study. This method aims to understand and explain the digital transformation in the retail sector in circumstances of COVID-19. The use of a case research is justified by the need to understand a real-life phenomenon for which there is very limited knowledge (Yin, 2018). To carry out the case research, we used three sources of data collection for triangulation and corroboration purposes. The data were collected through semi-structured interviews, official documents and participant observation (Patton, 2005; Yin, 2018). The interview technique was used since it is common for qualitative research and because it allows the researcher to ask key questions about the topic without limiting the respondent's response (Gill et al., 2008). The official documents, allowed to provide general and formal information of the organization. While the participant observation, allowed to identify behaviors and practices in the field (Fernandes et al., 2021). Both, official documents and participant observations were considered as secondary sources, helping to corroborate and triangulate data in order to improve the research validity (Bowen, 2009; Jorgensen, 1989). Through the content analysis technique (Blaxter, 2010) and following the same procedure as Reis et al. (2020b), it was possible to analyze all the data collected.

As the research was carried out in a well-known multinational logistic operator, located in Lisbon-Portugal, for confidentiality reasons, the identification of the logistics operator and the names of the participants were remained anonymous. The objective of the empirical research is related to the understanding of the effects experienced by employees before and during the COVID-19 pandemic. Thus, the research aims to identify the effects of COVID-19 in the retail sector and the respective digital transformation initiatives with a view of mitigating SARS-CoV-2 dissemination. For a comprehensive, in-depth and strong contribution, the selected employees had a high level of knowledge, as they perform different tasks and duties across the organization. Respondents' roles ranged from analysts,

warehouse directors, managers, developers, coordinators and department directors. Prior to the interview, the researchers shared a script (Appendix A2) with the identification of the research topic, the targeted audience, the research objectives, and the questions to be asked. During the interview process, the fact that it was authorized the audio recording by the respondents, it allowed the transcription with great detail, which helped for further analysis and identification of the key topics. The research involved 18 respondents, the majority of whom were male (60%), aged between 32 and 49 years old. More details are shown below, in Table 7.

Table 7. *Interviewees' details.*

Department	Respondents	Years working at the company (average)	Age (average)
Administration	1	4	44
Costumer service	3	21	45
Human resources	1	20	49
Improvement and new projects	2	6	37
Information technology systems	1	10	45
Operations	3	5	33
Process reengineering of fast moving consuming goods (FMGG)	1	1	32
Pharma process reengineering	1	0,6	41
Quality & environment, health and safety	2	12	36
Transports	3	5	36

Official documents were also made available by the company, along with documents taken from the official website. This information allowed the identification of internal contingency plans shared with customers, the identification of multidisciplinary teams and their respective responsibilities, and also the initiatives taken by the company in the context of the pandemic, namely teleworking. Subsequently, these data allowed the crossing and validation of information from other sources that allowed the corroboration and validity of the data. Participant observation made it possible to identify behaviors and attitudes about the interviewees, but also the on-site confirmation of the practices used by the company.

This allowed defining themes closer to reality and delimiting issues that arose during the exploratory phase of the research.

Table 8. *Summary of the methodological process.*

Methodology	Methods	Sources of data collection	Data analysis techniques
Qualitative and descriptive	Systematic literature review	Scopus/Elsevier – Scientific database	Content analysis Bibliometric analysis
Qualitative, exploratory and descriptive	Case study research	Semi-structured interviews Official documents Participant observation	Content analysis

For a better understanding, we summarize the methodological process in Table 8. This table is divided into four main columns that deal with the methodology, methods, sources of data collection and data analysis techniques. By presenting the information in an organized and transparent manner, we hope to provide a holistic view and a better comprehension to readers.

III.3. Findings

This section is divided into two subsections. First, we present the results of the systematic literature review with data obtained from Scopus. The section findings are the result of bibliometric analysis (III.3.1.1.) and content analysis (III.3.1.2. and following). Then, we present the empirical results, from a case study of a Portuguese logistics operator. In particular, the analysis of how digital transformation in retail has helped to mitigate the effects of COVID-19.

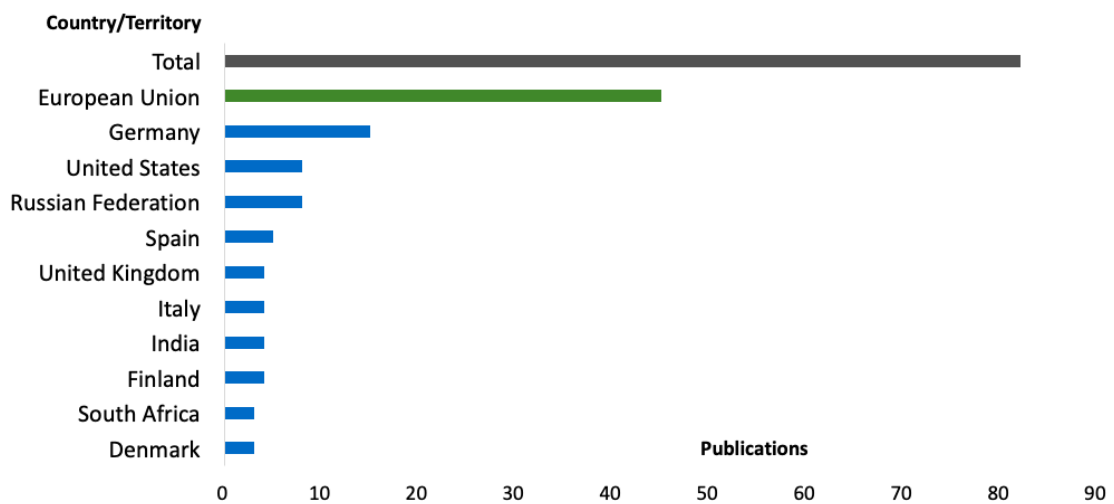
III.3.1. Results from the systematic literature review

III. 3.1.1. Brief analysis of the state-of-the-art

We start this section by highlighting the overall results of the literature review. These results are distributed by countries, type of document, subject area and year. Regarding the results by countries: Germany, the Russian Federation and the United States stand out, as shown in Figure 3. From our analysis, it is evident that Germany and the Russian Federation are countries that are investing in digital transformation of retail infrastructures in order to

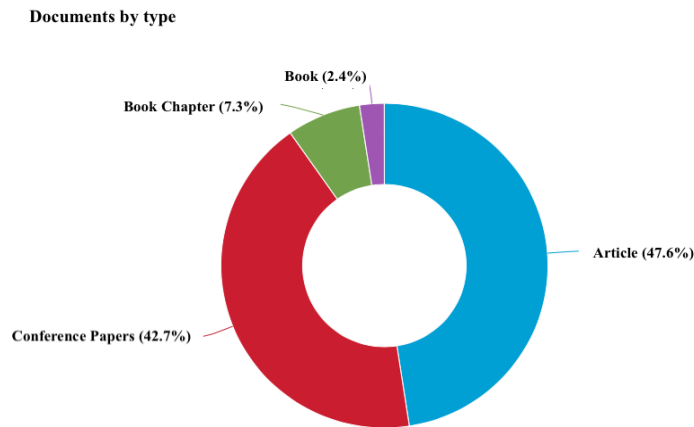
remain competitive in the international markets. Although both countries have a great ambition to develop digital technologies in their economies, they are still not satisfied with their achievements, therefore, these countries have sought to maintain a high level of technological leverage. On the other hand, the United States stands out, for having the largest retailers in the world (ex: Amazon), as well as for the issue of increased sales of e-commerce generated by COVID-19.

Figure 3. *Distribution per countries (Top 10 countries).*



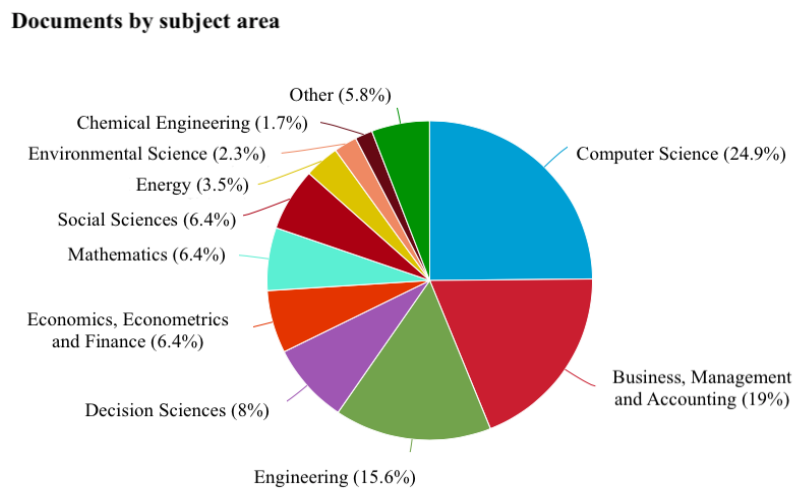
To get a holistic view, we considered a more comprehensive value of 82 articles in the scope of the screening phase (Table 6). With this macro analysis, it was possible to ascertain that the European Union (EU) stands out from the remaining 37 countries, either because of the investment that has been promoted by the European Commission or due the investment of the 45 EU countries identified in the Scopus database. As shown in figure 4, we highlight that of the manuscripts taken from Scopus, 47.6% were journal articles and 42.7% were conference proceedings. First, the articles correspond to peer-reviewed journals and reliable documents that intended to contribute to the theory. In addition, we found that conference proceedings were also relevant, which reveals that scholars had a greater interest to debate this topic among peers, both in terms of digital transformation and COVID-19.

Figure 4. *Distribution per type of document (retrieved from Scopus).*



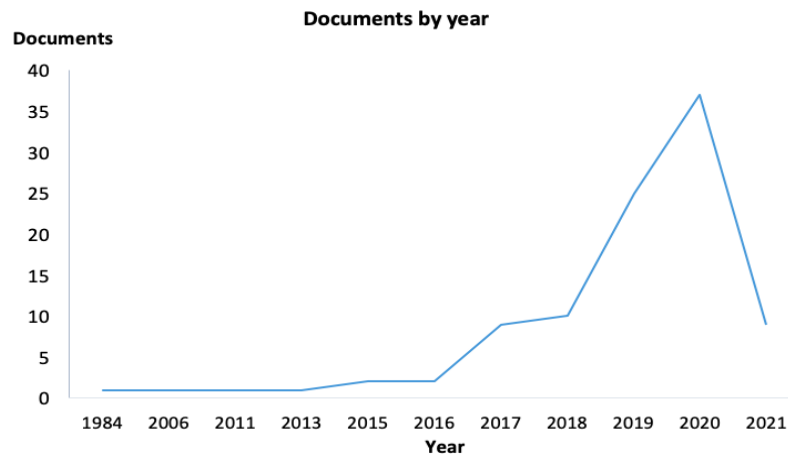
Regarding the distribution per type of document (Figure 5), it is evident that there is a high distribution of the results that means that a topic as digital transformation can occur in any sector. However, we highlight the computer science domain (24.9%), which has the highest percentage because it is where the most technical concepts are approached, such as Big Data, Internet of Things (IoT), Artificial Intelligence (AI), Cloud Computing, Augmented Reality (AR), Radio Frequency Identification (RFID), among others. It is expected that computer science will continue to grow gradually as a result of the acceleration of the digital transformation process worldwide. Then comes the business and management domain (19.1%), where the retail sector is predominantly discussed and increasingly addressed in relation digital transformation in companies. These results are in line with other previously published papers [36].

Figure 5. *Distribution per subject area (retrieved from Scopus).*



Finally, we present Figure 6, where we can reveal the distribution of articles published by year. The oldest document dates from 1984 and all the others date from the 2000s. It is only from 2016 that a growing number of publications is noticed, which reveals that the themes "digitization" and "digital transformation" are relatively recent in study academics.

Figure 6. *Distribution per year (retrieved from Scopus).*



As of 2019, growth continues to be exponential given that that date goes back to the beginning of the COVID-19 pandemic and that it was identified as the most recent cause of the acceleration of digital transformation in companies, largely due to the increase in online retailing. Additionally, we can also justify that the millennial generation (Y) is considered as the biggest driver of technological advances. In the next subsections, we present the qualitative analysis, focused on the 60 selected manuscripts. If in the state-of-the-art we tried to present a macro perspective of the phenomenon, we now present the results of the content analysis with greater depth.

III.3.1.2. General overview of digital transformation

From the analysis we performed, we found that the market has evolved with the emergence of new types of technologies and consumers (Corso et al., 2018). On the other hand, technological growth has reinforced the need for companies to adapt to a currently volatile market and meet the fast demands of consumers (Ferreira et al., 2020). According to Fenwick et al. (2019), the technological impulse is the reason why companies are adopting multi-channel business models. It is, therefore, in these dynamic environments that the term "digital transformation" has been proposed, presenting itself as a research opportunity for the academic community (Chaparro-Peláez et al., 2020; Mugge et al., 2020). In this sense,

modern technologies with AI, Machine Learning, IoT, among others, are part of the so-called fourth industrial revolution or just industry 4.0 (I4.0) (Alexandrova & Poddubnaya, 2020). On the one hand, the introduction of these disruptive technologies in business models of companies from different sectors and industries. On the other hand, I4.0 allows data and information to be shared vertically in any process in the value chain and, therefore, a new network architecture of technological companies is formed (Bulović & Čović, 2020).

Regarding the main terms, digitalization is commonly associated with digital transformation, although differences are identified in the literature (Reis et al., 2018; Reis et al., 2019). Digitization is identified in the analyzed articles as the transformation of traditional processes into digital ones (Kohli & Johnson, 2011). Thus, the authors Loske and Klumpp (2020) also consider that digitization is a "process of converting analog data into digital data sets" (p. 2). A good example of digitization are the e-books or downloadable music, that is, the conversion of tangible products into products delivered digitally (Kohli & Johnson, 2011). Today, companies are investing on products and process innovation through new digital solutions, allowing them to deal with a greater amount of data and information with more efficient infrastructures (Castagna et al., 2020).

The digital transformation process, despite having gained greater prominence recently, dates from the 90s (Souza et al., 2020). The digital transformation consists of the integration of information technologies in the operations of companies, whether internal or external (Chaparro-Peláez et al., 2020). It can also be considered as a change that occurs between the implementation of technologies in a system within a company (Loske & Klumpp, 2020). This transformation is supported by the adoption of new technologies from which new performance, new processes and new business models emerge (Allen, 2019). In addition, digital transformation is not only linked to technology, but also to an improvement in the business model, collaboration and culture (Krasonikolakis et al., 2020). This transformation arises with the use of digital tools in the daily activities and processes of the company, being subsequently achieved through its promotion inside and outside it (Bulović & Čović, 2020). A company that opts for digital transformation seeks to offer a good and / or service through new digital formats, thus achieving a link between physical processes and virtual processes (Souza et al., 2020). Some authors identify the possible contributions of digital transformation in a company, such as: (1) optimization of physical and digital resources, (2) obtaining greater competitive advantage, (3) greater creation of value for the customer and

(4) reduction of costs (Cahyadi, 2020; Rode & Stammen-Hegener, 2019; Wolpert & Roth, 2020).

However, not all industries have been able to keep up with this technological pace and adopt digital technologies, either due to investment difficulties or lack of adaptation to their business model, they failed (Kohli & Johnson, 2011). In a digital company, success involves accepting market uncertainty and volatility, identifying opportunities and having the ambition to realize them, as well as making quick decisions taking into account innovation, customers and competitors (Corso et al., 2018).

The digital transformation has played a disruptive role in various sectors of activity; however, the retail sector was considered to be one of the sectors most prone to digital transformation (Filotto et al., 2020; Rode & Stammen-Hegener, 2019; Wolpert & Roth, 2020). This is due to the emergence of new consumers called “digital natives”, who have driven the use of digital platforms and, consequently, the need for innovation in current business models (Ferreira et al., 2020).

III.3.1.3. Digital transformation in the retail sector

Retail represents one of the sectors that has undergone the most digital transformation in its operations (Krasonikolakis et al., 2020), the result of offering a wide range of items; but also having to keep up with the sudden demands of the modern economy (Almaslamani et al., 2020; Ivanova, 2021).

From our analysis, we identified some relevant episodes of digital transformation in retail and which we present below.

Starting with the digital age and consumer behavior, we found that disruptive technologies have been identified as an agent of change. In other words, consumers have been changing their buying habits (Alexandrova & Poddubnaya, 2020; Hough & Chan, 2018; Suel & Polak, 2018), which is influenced by digital technologies. Consequently, the retail sector was forced to incorporate new digital strategies in its business model in order to respond to the new needs of consumers (Singh & Thirumoorthi, 2019). A good example is the exponential growth in the use of smartphones and mobile payment (m-payment) (Wohllebe et al., 2020). As a result, a new type of "digital native" consumer has come to the fore (Ferreira et al., 2020). In short, if, on the one hand, digital technologies have had a disruptive effect on the traditional purchasing process, providing a better shopping

experience to the customer (Bulović & Čović, 2020; Ferreira et al., 2020); on the other hand, it also allowed retailers to capture more information in order to optimize the management of their supply chain (pull systems) (Suel & Polak, 2018). Another episode worth of being highlighted is the e-commerce, which has been enhancing digital transformation in the retail sector since the 90s. In that regard, omni-channel operations have been singled out as the future of retail, which is leading large companies to invest in measures and strategies that result in increased points of contact, strengthened brand image, increased sales, improved service, integration of channel information and customer loyalty (Mugge et al., 2020). For global network retailers, the omni-channel operation is seen as an important solution to meet the needs of customers at any time and place, due to the synchronization of data and information and their interaction between different channels (Alexandrova & Poddubnaya, 2020). Additionally, I4.0 is an almost indisputable milestone in the context of digital transformation, as the concepts of IoT, robotics and AI have radically changed retail operations in addition to human action (Hamidi et al., 2019).

Given the growth of I4.0, the concept of smart retail has been expanding. This concept has in its genesis an ecosystem of customer-centered activities and where new business modalities are underlying, such as unattended stores (Sujata et al., 2019). As the consumer experience is a decisive factor, retailers have invested in offering a combination of quality products and services (Chernova et al., 2020). This combination is mediated by increasingly intelligent and technological stores. As an example, we can find the autonomous stores that use the latest technology (e.g., vision machine) and where the customer has full autonomy to choose and pay without the help of a store attendant (Hamidi et al., 2019). That is the reason why automated teller machines are becoming a reliable option for retailers, as they offer less costs as a result of replacing human intervention, but also greater customer involvement in the shopping experience, as customers are co-producers of services (Hauser et al., 2019). In that regard, Amazon Go was created to be one of the world's most advanced checkout-free shopping experience due the use of computer vision, sensor fusion and deep learning (Amazon, 2021; Hamidi et al., 2019). According to Amazon (Rahaman et al., 2019), the technology just walk out automatically detects when products are picked up or returned to the shelves and keeps them in a virtual cart and, as soon as the shopping experience is completed, amazon charges the purchase on the Amazon account. The future of retail points out the autonomous stores model to be increasingly used (Hauser et al., 2019; Singh &

Thirumoorthi, 2019). Thus, the concept of smart city has also been enabled by the growth of I4.0, insofar as it aims at preparing infrastructures in different areas (i.e. Healthcare, Energy, etc.) to standardize and use IT systems and networks of sensors more comprehensively. An example from the literature is e-Pharmacy in the United Arab Emirates, where digital data transfer between patients and pharmacies is based, and whose objective is to optimize the sale of medicines through a system that at the same time has greater efficiency and less margin of error (Rahaman et al., 2019).

Finally, the academic community has not neglected the impact of COVID-19 on retail. COVID-19 is impacting both the relationship with customers and the indoor operations of logistics operators. In that regard, digital technologies are once again supporting service delivery or sale of products continuity by increasing the use of existing technologies (e.g., contactless payments) or accelerating new channels and disruptive technologies (e.g., Click & Collect, Grab & Go).

III.3.1.4. Digital transformation framework

Globalization and rapid changes in consumption patterns, combined with the effect of digitalization, require the retail sector to have flexibility in its business models, innovation and effective management of its capabilities in order to succeed (Sund et al., 2021). The fundamental resources for digital transformation are focused on the digitization of processes and the focus on digital technologies (Alexandrova & Poddubnaya, 2020). The technologies mentioned so far (e.g., AI, IoT) allow companies to automate processes, reduce costs, customize supply, anticipate demand and supply and increase competitive power (Hauser et al., 2019; Singh & Thirumoorthi, 2019; Souza et al., 2020; Suel & Polak, 2018; Sujata et al., 2019). The well-known Beiersdorf is one of the companies that implemented digital technology (SAP) to build digital capabilities in the organization, create business opportunities and return to customers the products that meet their needs (Vom Brocke et al., 2017). However, this can lead to the idea that the solution involves only investment in technologies (Bollweg et al., 2020), but it will be insufficient if managers neglect the external environment (Ferreira et al., 2020). Today, the biggest challenge that companies face is to achieve an effective combination of physical and digital resources to improve customer service (Chaparro-Peláez et al., 2020). However, if automation can result in less work; on the other hand, it will require from retail a more qualified and specialized workforce to accompany technological innovation in processes and activities (Brehm &

Klein, 2017). For digital transformation, digital tools are not enough, but also employees with strong technical skills to be able to get the most out of them (Kothari & Seetharaman, 2020). Sund et al. (2021) identifies as a possible solution for companies the creation of an innovation laboratory responsible for identifying, exploring and launching new business models that allow centralizing this responsibility in a single department.

Today, retailers' operations and decisions remain focused on the customer, their needs and requirements must be seen as the engine to change, align and define the strategy (Cahyadi, 2020; Ferreira et al., 2020; Ivanova, 2021; Sund et al., 2021). Omni-channel operations are increasingly reliable for the future of retail trade, by allowing the interconnection of all channels (Barann et al., 2020). Retailers should consider digitizing touch points to allow the implementation of techniques in physical retail stores, which previously were only available in online retail (Souza et al., 2020; Barann, 2018). According to Chernova et al. (2020), the most important factor for the customer is no longer the price, but the shopping experience. Therefore, the shopping experience will impact the perception of value, and this can be improved through self-service technologies and mobile technologies, as they close the gap between online and offline channels (Barann et al., 2020).

Digital literacy and organizational culture can mean an important impetus for digital transformation (Brehm & Klein, 2017). If companies focus exclusively on themselves, this can be a barrier to the transformation not taking place successfully (Mugge et al., 2020). It is important that companies are collaborative, empathetic and motivating in the corporate environment that promotes creativity, team spirit, innovation and commitment (Brehm & Klein, 2017). Leadership will also be central to the digital transformation process, as it will have the responsibility to guide employees to achieve the objective of the digital strategy, it must be participatory and collaborative to promote the involvement and commitment of all with a global objective (Krasnikolakis et al., 2020; Van Dyk & Van Belle, 2019).

From the data analysis, we identified some of the factors necessary for digital transformation, such as technology, skills, culture, literacy, customer focus and leadership. However, they can also present barriers, such as: scarcity of resources, resistance to change, high cost of implementation, security, data privacy and cyber-attacks (Alexandrova & Poddubnaya, 2020; Bollweg et al., 2020; Van Dyk & Van Belle, 2019; Zaychenko et al., 2020). In addition to the contributions of the academic community on the subject, it is necessary to deepen knowledge and develop in-depth conceptual frameworks on digital

transformation in the light of COVID-19. So, we hope that our article will also motivate some of our academic peers to further study this subject.

III.3.2. Results from the Case Research

III.3.2.1. Digital transformation: times of change

Logistics employees are well aware that digital transformation implies organizational change. The results showed that digital transformation implies the introduction of technological components into the logistic processes, whether they are administrative or operational. In addition, the interviewees revealed that the digital transformation consists of the dematerialization of information and processes, which allows a dynamic, efficient and active management.

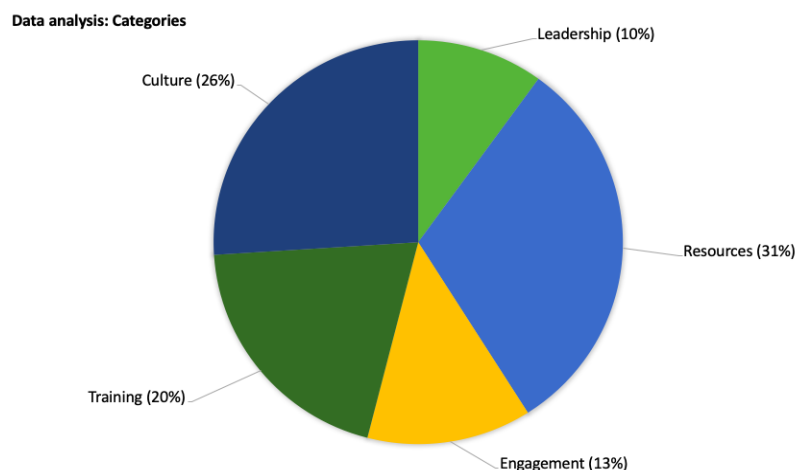
With the logistics operator having a vast portfolio of fast moving consumer goods (FMGG) and pharmaceuticals, it was essential to use technological solutions in order to meet the needs and expectations of customers. While the majority of respondents hold administrative positions, they have contact with customers and partners. Some of the most recent changes identified were the adoption of the following capabilities: 1) POWER Business Intelligence, a tool that allows the analysis of solutions to improve decision making; 2) Enterprise Data, which allows the multinational company to efficiently manage the considerable volume of data from its branches; 3) Data Warehouse, used in the customer service area, assists in conducting research and analysis related to historical data. For instance, this technology makes it possible to measure the levels of productivity and operational efficiency (picking errors, incidents, complaints); 4) Web portal accessible internally (employees) and externally (customers) through credentials, it is also an example of structuring information through the digital channel that facilitates communication, use and decision; 5) Artificial Intelligence, based on the SPE system (Order Production System), this system prepares orders for pharmaceutical products through a procedure of light direction (pick-to-light and put-to-light); 6) Inventory Maintenance Unit (SKU), used to search and identify inventory, allowing the separation of large quantities from small inventory maintenance units; 7) the Radio Frequency Identification (RFID), used in the various stages of the process, from reception, storage, preparation and shipping, allows easy and effective tracking of goods in real time.

The changes presented above were previously analyzed by multidisciplinary teams and have been implemented gradually since 2007. Each technology took into account not only the decision of the multidisciplinary teams, but also the needs and expectations of all stakeholders and which contributed to the decision of technological implementation. The digital transformation process has made it possible to respond to current COVID-19 challenges. In other words, since the company is responsible for supplying some of the main retailers in Portugal, it has also suffered from the consequences of changing consumption habits through COVID-19. Its prior preparation and incorporation of new digital technologies enabled it to respond in a timely and effective manner to the new needs of the market. The reaction of the companies would not be possible without the ongoing digital transformation process. Following, we will meet the structural and managerial instruments that allowed the digital transformation process to materialize.

III.3.2.2. Structural and managerial instruments for digital transformation

As mentioned above, due to COVID-19, the logistics operator was required to timely respond to the needs of the markets. To this end, this sector needed a prior adopting of new technologies, in order to prepare it to respond to fast and unpredictable phenomena. From our analysis, it was possible to identify some key-instruments that were decisive for the success of the digital transformation implementation. Figure 7 shows these five identified instruments for a successful strategy of digital transformation.

Figure 7. *Instruments for a successful digital transformation strategy.*



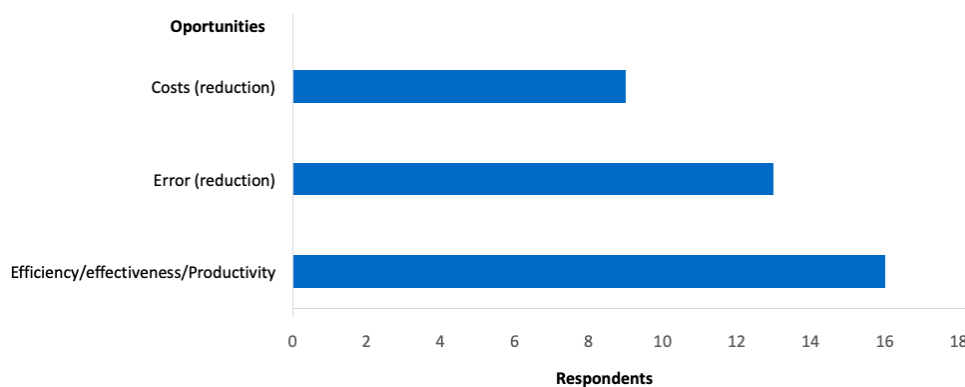
One of the instruments that were identified by the respondents was the resources (31%), which will have been considered relevant for the successful implementation of new technologies. The subcategories identified within the scope of resources are divided into: financial, human and material resources. First, for the transformation process to take place, significant financial investment is required. Since disruptive and innovative technologies are often expensive, involving high acquisition, implementation and maintenance costs. In turn, human resources also proved to be relevant, as it is necessary to outline a person or team or project that can spend time, knowledge and work to carry out the transformation. The process does not end here, as the introduction of new technologies in the organization involved the training of all employees who had to work with the technology. Third, the materials are also relevant, as the adoption of new technological solutions involves complementary tools to score the results. A large number of respondents also pointed to organizational culture (26%) as the basis for the company's progression in highly volatile environments. They considered that organizational culture is the “engine of transformation”, that is, the company's culture should be guided by values such as openness, initiative for innovation, motivation, teamwork and dynamism. Under these conditions, the company has the right ingredients to succeed, as there is a clear vision of the mission to be accomplished and everyone is on the right path to achieve it. In the opposite view, the organizational culture resistant to change is a strong barrier to its implementation, since employees understand the digital transformation as something uncertain and of high risk. No less important, we identified education and training, with around 20%, which was also reinforced by the interviewees as an indispensable factor when any type of change occurs, be it social, economic or technological. Employees must be trained and specialized to improve the use of modern technologies in the company; otherwise, the incorrect use of equipment's can impact the company's' and individual performance, which can result in damage to operational results, personal demotivation and dissatisfaction with the work. So it makes sense for people to get engaged (13%) before, during and after the digital transformation process. Employees must feel part of the process, their opinions must be heard, their work must be monitored and, thus, the group's synergy will bring better results. The leadership (10%) will also help in this process, as the leader of the digital transformation projects must be able to clearly convey the objective, trace the way forward, motivate and help his employees to move in that direction. Other factors were also pointed out, such as the innovation strategy, market analysis,

outsourcing, cost vs return analysis, quality control management, but because they had a less significant impact, we consider only the most relevant for discussion.

III.3.2.3. Opportunity and challenges of digital transformation

The data revealed that in the logistics and retail sector, the opportunities for digital transformation outweigh the challenges. The argument used by more than 50% of respondents is that digital transformation increases efficiency, effectiveness and productivity (Figure 8). In other words, technology is seen as an instrument that assists in the performance of human work, with a positive impact. It is, therefore, pointed out as a means that makes tasks and processes faster, more fluid, with the use of less time. From the analysis carried out, we found that the respondents' arguments are in line with the literature in other contexts (Reis et al., 2020a; Reis et al., 2021) insofar as modern technologies make complex decisions in the analytical-cognitive field with less likelihood of error when compared to humans. However, we also verified that human work is also vital to avoid or minimize possible errors, reduce shortages or product/service failure in the last mile.

Figure 8. *Top 3 opportunities for digital transformation.*



With regard to the cost reduction, digital transformation is a double-edged sword. Thus, if on the one hand, machines reduce labor costs due to automation, teleworking, etc.; on the other hand, the initial cost of technological implementation are high, as it requires significant investments. Nevertheless, it was possible to ascertain that the inclusion of new technologies substantially improved the company's competitiveness vis-à-vis its competitors, by minimizing waste, aiding in decision-making and transferring jobs to virtual channels during the COVID-19 pandemic.

As for the most relevant challenges, the most common was job loss. Although there is an awareness of the need for continuous improvement, the respondents' perception is that the digital transformation can reduce jobs in the logistics sector. The implementation of new technologies will reduce the importance of the human being, but will also allow greater flexibility (e.g., teleworking). Thus, respondents understand that the digital transformation will leverage the emergence of technical jobs and the enhancement of human skills.

Finally, concepts such as teleworking are twofold, as it was identified as an opportunity and challenge. That is, respondents identified teleworking as an instrument that offers greater autonomy, greater freedom and focus on work, in addition to reduction of travel costs. In the correspondents' perspective there is also no division of professional and personal space, which can result in environments of stress, burnout, loss of social bond with the company and colleagues, lack of working conditions, lack of creativity and isolation. The line that separates the two perspectives is tenuous and, therefore, there must be an understanding on both sides to ensure that the employee has a balance between personal and professional life.

III.3.2.4. Mitigating the effects of COVID-19 through disruptive technologies

In the context of the COVID-19, companies faced an unprecedented scenario that affected the management of their operations. In this case study, the unit of analysis studied was no exception and the results corroborate the idea that the pandemic affected the company by accelerating the digital transformation process. In view of the results, we present some contributions on how the digital transformation mitigated the effects of COVID-19.

As it is a logistics operator comprising a portfolio of fast-moving consumer goods (FMGG) and pharmaceuticals, the effects of the pandemic directly affected the daily lives of these employees. First, because in the confinement phase consumption habits have changed and the gross demand from supermarkets and pharmacies has increased the volume of orders for this type of merchandise. With emphasis on basic needs, tobacco and some generic drugs, consumers preferred online and e-commerce gained expression in this sudden volume of orders. The company therefore had to adopt digital tools to support order preparation, namely Google Sheet, for better order management, team dimensioning and agility in the transport of goods.

Teleworking, in turn, was the biggest revolution for the logistics operator, since this measure was transversal to all administrative areas of the company to ensure the safety of

all employees. In this sense, there was an investment in media (e.g. laptops, smartphones, tablets) to ensure the normal functioning of the company at work by telematics. The VPN settings have been adapted for all employees to access remotely. Digital conversation tools such as Skype, Zoom and Microsoft Teams were also used, gaining expression as the preferred means of communication between teams and customers. The creation of Google Sheets made it easier to share information between departments. Some billing processes were improved through the creation of VBA code, to compose the face-to-face regime at the billing conference. The printing of paper guides on some customers has been replaced by digital sending. While the company faced a considerable percentage of teleworkers, additional solutions had to be created for the periodic training process. In this regard, an e-learning platform with mandatory training was created. The company recognizes that this is a scenario affected by the pandemic, but that it will be adopted in the future with good feedback from employees and their managers.

While the pandemic revolutionized the day-to-day management, companies had to adopt new working methods and/or redesign the existing ones. Although the success of digital transformations in the company has been boosted by the pandemic, it was fundamental for cultural change within the organization, whose focus was innovation and continuous improvement. It is thus evident that the digital age is increasingly revolutionizing the organization and its stakeholders, in particular customers who demand greater responsiveness in digital media. The adaptation of the business model to the digital is the result of the desire to follow the market and be up to the needs.

In short, while COVID-19 affected the retail and logistics sector, it also served as a wake-up call to an emerging reality – the digital one. Thus, the modus operandi have been increasingly focused on e-commerce, e-learning, teleworking, innovative organizational culture and continuous improvement. Which, in turn has been seen as a mitigating force for the effects of the disease, but also a driving force for digital transformation. In the post-COVID-19, the logistics operator under analysis in this article hopes to invest in new technologies, aiming at a greater integration of robotic and artificial intelligence technologies in the logistics process, while intending to maintain the advances made in the digital field.

III.4. Conclusions

This article aims to fill a gap in the literature in the context of the digital transformation process and how technological advances in the retail sector have mitigated the effects of COVID-19. To do so, we used a multi-method research, which included two research strategies – a systematic literature review and a case study. The use of this methodological option is justified by the need to deal with a timely phenomenon and for which little is known. Therefore, the underlying objective is for one method to be used to support the other.

With regard to the theoretical contributions, we have identified several key findings. The first concerns the foundation of a new customer profile and what is the effect of the digital age, prior to the COVID-19 pandemic. This profile is due the development of new digital skills and the adoption of disruptive technological means that enables a greater connection with companies. The second contribution refers to the identification of a gradual transition from I4.0 concepts to the traditional retail sector. In other words, we found that retailers and logistic operators have been looking for technologies that allows them to establish of new digital interactions with customers and employees. In this regard, we identified structural and managerial instruments that allowed the development of advances in the field of digital transformation, as is the case of: obtaining resources and developing an organizational culture that promotes change, training employees and engaging them in processes, as well as leadership that can provide the right guidelines. Following, we concluded with the identification of changes in the organizational *modus operandi* that made it possible to mitigate the effects of COVID-19, such as: the increase in e-commerce, e-learning, teleworking, innovative organizational culture and continuous improvement.

With regard to managerial contributions, this article aims to encourage other companies in the sector to follow a similar path or to complement the knowledge acquired with new and relevant information. It is important to note that COVID-19 had a disruptive effect on companies and reinforced the importance of digital transformation through scenarios that forced both consumers to adopt other means of relationship with companies (e.g., due to successive confinements) and companies that had to quickly respond to market demand. While the digital transformation is back at the center of corporate strategies (if it ever ceased to be), academics and professionals must be prepared to monitor new phenomena that may arise in the future and that may once again contribute to the promotion of the digital trend.

This research is not free of limitations. With regard to the systematic review, this research presents a snapshot of the reality, since the Scopus database is constantly being updated. Therefore, it is expected that the results of this research are restricted to the moment in which it was carried out. It is also likely that relevant manuscripts were left out of the analysis due to the application of filters. Although PRISMA allows the incorporation of documents that, in the researcher's perspective, are relevant. With regard to the case study, this research was limited to the Portuguese reality. In our opinion, the presented results are a good starting point, but it does not have the conditions to guarantee generalization. In other words, the results must be validated in other countries, inside and outside the European context. Future research may also consider conducting a quantitative and more comprehensive post-pandemic study to analyze the effects of COVID-19 on the retail industry. In particular, on those organizations that have chosen not to invest in digital technologies, but also the COVID-19 effects on companies in which they have chosen to do so.

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CONCLUSIONS

First of all, we would like to highlight that this master thesis had always the aim of filling a gap in the existing literature, regarding the needs and demands that the retail sector suffered on the COVID-19 pandemic. This research allowed to identify the various impacts felt by the retail sector during the pandemic and, therefore, in the future, the retailers will be more prepared to improve their decision making on that kind of scenario. As argued in the articles, the sector suffered economic, social and health effects, and those had a direct impact on daily work. Companies have had to reinvent themselves to resist this new scenario, to keep their customers and their daily activity. That is why below we highlighted four main topics founded throughout the research:

Human Capital: Although we are living in a Digital Era and heading towards Industry 4.0, technology was not enough to fight this scenario. The key factor in fighting the pandemic was human capital and led that fight in retail sector, thus has a social role so that the population was not affected. As can be identified in most articles, the retail trade was considered one of the key sectors in this fight against COVID-19, and this was only feasible because of their workforce. Companies realized that human factor should not be neglected, and that is the reason why they should focus on investing of protection and hygiene measures for their employees. In an uncertain and fearful environment, the demand for goods by population has increased (many of them, non-essential) associated with the confinement, and it has become an overload for employees due to the need to secure goods on the shelves to avoid ruptures. Retailers met the expectations and demand of the market with a quick and effective response from order to delivery, so it was possible to fight the lassitude effect as well as food shortages. In this regard, the retail sector played a social role while ensuring the delivery and sale of products to the population. Communication to their employees was also a solution found by building a foundation of trust and security to avoid contexts of stress and burnout. Thus, the relation between the company and employee is strengthened because there is a secure and protective environment. As well, also spill over to the customers, which could be mean his return to the store after the pandemic. To guarantee loyal and trust of the customer, retailers must continue investing in protection and hygiene measures and a strategy that reinforces human factor through environmental conditions and remuneration for their effort and commitment.

Change of consumption habits: In pandemic times, the keyword to personify this era is changing. In light of these scenarios, change can mean opportunities for the retail sector, and it has indeed happened. The first change was in shopping habits, i.e., the population bought in larger quantities and gave priority to essential and durable goods. On the one hand, it was expected that shopping preferences would change over time, as a result of the compulsory confinement that conditions the frequency of trips to stores. On the other hand, this change was fast moving and, therefore, the retail sector had to quickly and effectively react, so that there would be no shortage of products on the shelf. For this reason, it is important that established business models are flexible and resilient to make sudden decisions under these conditions, otherwise, they will not hold up. Also, the environment of fear and uncertainty has leveraged online commerce and the increase in digital consumers has sprouted. This has resulted in a greater focus on e-commerce and the strengthening of digital strategy. Although many retailers are still lagging behind in this type of point of sale, they have been forced to integrate it into their business models to meet the new demands of their customers. Change and resilience are key success factors for survival and competition in the retail sector in the face of the measures that will affect the market, and retailers must take into account the volatility of their consumers' preferences under these types of scenarios.

Digital Transformation: As soon as physical contact was considered a danger, several retail companies shut down their activities to mitigate the SARS-CoV-2. To protect their employees, and to go back to normal, several measures were taken, such as teleworking. With employees working from home, the investment in tools and conditions to perform a good level of customer service was not overlooked. However, some activities cannot be performed remotely and so these employees have distanced themselves physically and have prioritized people-to-people contact through digital communication tools. The digital transformation required by the pandemic led to a faster evolution in the industry either through electronic payments in stores, tracking of products, online ordering, and or delivery forecasts. Unequivocally, it was one of the most mentioned effects through the case study, a result of the imposition of CoViD-19, but also of the new customer profile of the digital age. In the business domain, the future paradigm is to develop new digital skills and adopt disruptive technological means that allow a greater connection with their customers.

The «new normal» after pandemic: The CoViD-19 pandemic has revolutionized mindsets and beliefs, and therefore the organizational modus operandi have changed and

will continue to change when the virus is gone. Teleworking, which was once envisioned for intellectual organizations, is now an applicant practice in various sectors and will remain a new way of working. Also, the skepticism of using information and communication technologies has easily fallen by the wayside, and companies have realized the various benefits of its use. The contribution of digital transformation has also enabled the identification of a gradual transition of Industry 4.0 concepts in the retail sector, i.e., the sector is looking to invest in technologies that enable greater digital interaction with both employees and their customers. The perception of the shopping experience has taken over from price and product quality, with the customer now prioritizing having the power to decide when, how, and where they shop. However, as on every path, some obstacles have to be overcome. That is why, are structural management tools to advance digital transformation, such as: obtaining resources and developing an organizational culture that promotes change, training and involving employees in processes, and leadership that can provide the corrected guidelines. In sum, on this "new normal", the most felt measures should not be neglected by retailers for scenarios of this type are the increase of online commerce, telecommuting, innovative organizational culture, and a commitment to continuous improvement. Thus, retailers should see these changes as opportunities to build a sustainable future strategy.

This master thesis is not free from limitations, since it is a compilation of various types of articles it will be important to conduct further studies on the topic to validate the conclusions stated so far. The systematic literature review leads to the imposition of measures and practices on the workforce, and therefore it will be interesting to conduct a research that studies the negative implications for the productivity, motivation, and well-being of the retail workforce due to the lassitude effect. The empirical research portrays a case study in light of the national reality, and therefore it will be relevant to understand its reproducibility in companies in the industry under the realities of other nations. Indeed, the event of CoViD-19 is limited in time, as it may not occur again. However, it is encouraged future academic discussion on the topic to enrich the literature. The validation of the data, or even the introduction of new constructs, may give rise to build a stronger conceptual model regarding the effects of CoViD-19 pandemic on the retail sector.

An interesting future research will be confronting the effects built here during the pandemic with the post-pandemic effects, to see if they remain the same or change. In light

of this master thesis results, it will be relevant to understand the effects felt by companies that carried out all the measures mentioned on the case study, but particularly those that did not opt for the digital strategy and what their outcome was.

Digital Transformation is once again in the focus of companies' strategies and, therefore, academics and professionals should also be prepared to monitor and control future phenomenon's and contribute to the promotion of the digital trend.

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APPENDIX A1

Interview Script 1

Theme: Impacts of COVID-19 on Retail - a Case Study

Sample: Employees of a logistics operator (Portugal)

Objective of the Interview: To collect as much data and information as possible from the collaborators to measure the important constructs for the object of study. It aims to understand the main impacts of COVID-19 on the company, with effect on both its employees and its customers. Identify what measures and practices were adopted during this context.

Interview Location: Logistics Operator - Head Office in Portugal

Time: The estimated time per interview is 45 minutes, however it can be interrupted and resumed whenever the absence of the interviewee(s) is justified.

1. Previous Notes

- a. The semi-structured interview, which was intended to be an asset for the study, was one of the selected data collection sources since it obtains a large amount of information that is voluntarily provided by the interviewee;
- b. The interviewer must take into account the object of study; however, it may allow the interviewee to discuss, but there is always control over the initial theme of the interview.

2. Interview Protocol

- a. Institutional Presentation;
- b. Presentation of the object of study;
- c. Request for authorization for recording and transcription of the interview(s);
- d. Ensuring the confidentiality of the interviewee(s).

3. Generic Information

- a. Name;

- b. Department and Function;
- c. Contract arrangements;
- d. Period working in the company.

4. Key issues

- a. What is the role of the logistics operator in covid19 context?
- b. What measures and practices have been implemented during the COVID-19 context?
- c. Who were these measures addressed to?
- d. How is compliance with these measures and practices regulated/monitored?
- e. What are the main changes caused by the epidemic with effect on daily work (volume, number of working hours,urgent requests, etc.)?
- f. Do you consider that THE were useful in this phase of the pandemic for the logistics process? If so, to what extent?
- g. Have communication channels been used to disseminate any strategy?
 - i. If so, what and what kind of information?
 - ii. And what was the result of this information strategy?

5. Final Comments

- a. In situations that the interviewee intends to suggest additional information to the interviewer that he considers relevant to the investigation, this opportunity should be given;
- b. Thank the participation and collaboration of the interviewee(s).

APPENDIX A2

Interview Script 2

Theme: Towards Digital Transformation: A multi-method investigation to identify the impacts of CoViD-19 on the retail industry

Sample: Employees of a logistics operator (Portugal)

Objective of the Interview: To collect as much data and information as possible from the collaborators to measure the important constructs for the object of study. It aims to assess whether the current pandemic, caused by COVID-19 disease, contributed to the acceleration of the digital transformation process. And, if so, how and in what measures/practices it was reflected.

Interview Location: Logistics Operator - Head Office in Portugal

Time: The estimated time per interview is 45 minutes, however it can be interrupted and resumed whenever the absence of the interviewee(s) is justified.

1. Previous Notes

- a. The semi-structured interview, which was intended to be an added value for the study, was one of the selected data collection sources, since it obtains a large amount of information that is voluntarily provided by the interviewee;
- b. The interviewer must take into account the object of study, however, may allow the interviewee to discuss, and there is always control over the initial theme of the interview.

2. Interview Protocol

- a. Institutional Presentation;
- b. Presentation of the object of study;
- c. Request for authorization for recording and transcription of the interview(s);
- d. Ensuring the confidentiality of the interviewee(s).

3. Generic Information

- a. Name;
- b. Department and Function;
- c. Contract arrangements;
- d. Period working in the company.

4. Key issues

- a. What do you mean by digital transformation?
- b. Are you aware if any of these processes have occurred or occurs in the company?
 - i. If so, what and when?
 - ii. What was the result(s)?
- c. What factors do you identify as crucial to a digital transformation in the enterprise?
- d. Are you aware of the use of modern technologies in the company's operations?
 - i. If you know each other, which ones?
 - ii. What are the advantages and disadvantages of its use?
- e. Do you consider that the context of COVID-19 has contributed to the acceleration of digital transformation?
 - i. If so, in what way?
 - ii. And what was the result?
- f. In your opinion, does the company still have the potential to improve digital transformation?
 - i. If so, in what way?
 - ii. And what will it take to achieve?
 - iii. Do you consider that the implementation of these technologies has parallelism in other companies in the same sector?

5. Final Comments

- a. In situations that the interviewee intends to suggest additional information to the interviewer that he considers relevant to the investigation, this opportunity should be given;
- b. Thank the participation and collaboration of the interviewee(s).