

Master thesis

Humanitarian logistics: the impact of COVID-19 at
the reformulation of supply chain and logistic
processes – the case of Porto Food Bank Against
Hunger

KEDGE Business School

30th June 2022

Bordeaux

Master in Management

Programme Grande École

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Academic year: 2021/2022

Abstract

"2.37 billion people are without food or unable to consume a healthy balanced diet on a regular basis", according to United Nations figures (United Nations, 2020). Furthermore, the advent of the COVID-19 pandemic resulted in a rise of 70 to 161 million people facing hunger from 2019 to 2020, contributing to a total of 720 to 811 million undernourished people (United Nations, 2020). Food banking sector has faced an unprecedented scenario with fluctuating supply while facing an increasing number of requests from deprived people affected by COVID-19. As a result, the current research will concentrate on examining the obstacles faced by a non-profit organization, namely, Porto Food Bank Against Hunger, during the COVID-19 crisis. It will be evaluated how their logistical operations had to be changed when faced with a disruptive situation with a variable supply and demand.

Therefore, two main research questions were formulated, namely: *"What were the main challenges to Portuguese Food Bank Against Hunger during the pandemic COVID-19? And how they have affected their logistical processes?"* and *"What are the lessons that can be applied for future disruptive events to the organization?"*. Subsequently, in case of unforeseen emergency events, the study will give answers and recommendations for making the organization's supply chain more responsive and flexible.

To achieve conclusions, the research was conducted with a mono method qualitative approach, as it is based on one qualitative data collection technique, namely semi structured interviews. Moreover, it has been adopted an embedded single case study design to explore: the case of a non-profit organization, Porto Food Bank Against Hunger.

After the analysis of five semi structured interviews to five active employees of the organization, two narratives were produced. Firstly, a set of lessons and innovative approaches learned during the pandemic period, should be implemented in the short-term to produce long-term and sustainable effects. These suggestions include digital transformation of processes; implementation of controlling systems; education regarding food waste and food insecurity to raise awareness among stakeholders; foster self-sustainable and local alternatives as complementary supply sources; reinforcement of the existing partnerships and strive for creating new ones; mitigation of the root causes of food insecurity; investment in the training of the employees, and lastly, the adoption of data analytical tools and key performance indicators. Secondly, three main actions were proposed as a mitigation strategy to reduce the detrimental consequences of future

disaster incidents: establish emergency and contingency protocols; creation of an alimentary emergency platform as well as the establishment of institutional relationships with food delivery and food waste companies.

Keywords: Humanitarian logistics, Humanitarian Supply Chain Management and Logistics, Food Banks, Non-profit organizations, COVID-19 pandemic.

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List of abbreviations

HL – Humanitarian Logistics

HO – Humanitarian Organizations

HSCML – Humanitarian Supply Chain Management and Logistics

SCML – Supply Chain Management and Logistics

PFBAH – Porto Food Bank Against Hunger

SS – Social Security

INE – National Institute of Statistics

RSI – Social Insertion Income

1. Introduction

1.1. Background description

Humanitarian supply chain and logistics can generally be defined as the processes and systems that allow the movement of information, resources, skills, knowledge, basic necessity goods, and people to address humanitarian needs in a mannered way, focusing on serving as many people as possible in an emergency context (Thomas, 2008). Humanitarian logistics (HL) concern the help and first aid service that is required to face natural or man-made disasters, which are characterized to be unexpected events that disrupt the normal functioning of the society in a way that goes beyond society's capacity to cope with their resources (Bhimani & Song, 2016; IFRC, Unknow).

HL englobes a wide range of activities, for instance, its planning, procurement, acquisition, transport, tracking and tracing, warehousing, and expedition from the point of origin until the point of consumption, where vulnerable people's needs should be met (Thomas, 2008; Thomas & Kopczak, 2005).

Humanitarian organizations' mission is focused on the movement of financing and goods from donors to vulnerable people that are in a hazardous situation, acting as frontline assistance for needy people. Thus, logistics is a key process and forms an integral part in the accomplishment of humanitarian organizations' strategic activities, since it serves as a connecting link between "disaster preparedness and response, procurement and distribution, and between headquarters and the field" (Thomas, 2008:4). Besides this, logistics departments store all the information concerning the movement of goods in the supply chain and its costs, the efficiency of suppliers and transport entities, and the response time frame, which means that it constitutes a source of useful knowledge for post-disaster learning (Thomas, 2008).

According to Balcik & Beamon (2008), some aspects that make HL so difficult to manage are: the lack of coordinated processes of information, materials, people; unstable and unpredictable environments in which the operations take place; organizations most of the time, have a zero-time response, as it is largely done in situations of evident emergency and the whole process cannot be postponed. Furthermore, Kovács & Spens (2007) add the fact that HL is an extreme management challenge due to irregular demand and atypical constraints from the supply side.

Although humanitarian logistics may share a lot of principles with business logistics, HL is still an undeveloped and unexplored topic. However, it is arising more

attention as time goes on and more disasters take place, damaging humans lives and countries' economies (Jabbour et al., 2019). The emergence of the COVID-19 pandemic, which has come to assay the normal function of processes by disrupting supply chain processes and logistics, is also a rising issue that proves that more knowledge is needed to tackle this type of disturbing event (Kovács & Sigala, 2021; Kovács & Spens, 2011a). HO need to master its timely responsiveness to humanitarian needs through the agility and efficiency of their humanitarian supply chains (Nyamu, 2012; Wassenhove, 2006).

Hence, it is contradictory that an area that is so complex in terms of flexibility, unpredictability, resources constraints, and frame of time issues is yet so unevolved. Thus, it is this paradox that creates a need to further study the sector, creating an opportunity to advance and develop knowledge in the field (Nyamu, 2012; Thomas, 2008).

Moreover, the future scenario is not the best one for the world we live in. Ssengonzi & Oginski (2012) and Behl & Dutta (2019) highlight that over the past years, worldwide problems such as the emergency of climate change, financial or political crises, growth of population, economic and social disparity, health pandemics, hunger, and food insecurity are threatening the wellbeing of society and thus, increasing global instability, insecurity, and vulnerability.

According to statistics of the United Nations, “2.37 billion people are without food or unable to eat a healthy balanced diet on a regular basis” (United Nations, 2020). In addition to this, from 2019 to 2020, an increased number of 70 to 161 million people have faced hunger as a result of the emergence of the COVID-19 pandemic, which contributed to a total of 720 to 811 million undernourished people in the world (United Nations, 2020).

To mitigate this problem and reduce food insecurity, food charity organizations gather all their efforts to provide to every person an adequate and standard level of living “for the health and well-being of himself and of his family, including food, clothing, housing, and medical care and necessary social services” (Article 25 of the Universal Declaration of Human Rights, 1948).

Therefore, to reduce food insecurity and hunger, food bank organizations act in highly chaotic environments to alleviate the vulnerability of people in need. To pursue this, food bank organizations counteract food waste by asking for solidarity of people, since these non-profit organizations are predominantly dependent on donations and food sharing (Euro Food Bank, Unknown).

Parallely to what has been said about HO's, the supply chains networks in food

banks similarly operate in rather complex conditions, facing numerous challenges both on the demand and supply side (Ataseven et al., 2020a). Furthermore, some of the issues that difficult the operations are the uncertainty of demand from one hand and, at the same time, from the supply side; the lack of power of the final consumers; as well as the range of entities that food banks need to work with until the final product is delivered to final consumers (Ataseven et al., 2018).

Thereby, the present study will be focused on evaluating the challenges faced by a non-profit organization, namely the Porto Food Bank Against Hunger during a COVID-19 scenario. It will be assessed how their logistical processes had to change when the organization was facing a disruptive situation with fluctuating supply and demand. The conclusions of the research will be valuable and useful to various entities, such as other food banks organizations or other surplus food redistribution charity organizations. Besides this, the study will further contribute to enhancing the knowledge in the extant literature about humanitarian supply chain and logistics.

1.2. Problem statement

The food banking industry and the challenging resource constraints that this type of organizations experience, are worthwhile to research and study about, so that a group of possible solutions could be settled, to address the issues they face in the singular environment in which they operate. Furthermore, these difficulties were emphasized by the outbreak of the pandemic COVID-19 that has affected public health and worldwide economies and industries (Rolle, 2020).

In the food bank sector, the pandemic has disrupted supply chains due to health measures restrictions, lockdowns, quarantines, labor shortages, blockages of street routes, and physical distance measures (Rolle, 2020). Food banks had to go beyond their limits to “feed” vulnerable people, namely the newly unemployed individuals in addition to the previous impoverished ones (Akwii et al., 2021). Thus, food banks had to deal with a demand shock, with an increasing number of those financially affected by COVID-19 while, facing a supply shock with difficulties in obtaining food and monetary donations (Akwii et al., 2021). Consequently, effective and efficient solutions are needed to repair the supply chain management failures caused by the pandemic.

Even though this is not the first crisis undermining the food banks sector, the impact of the COVID-19 pandemic has brought severe and long-term effects induced by financial issues worldwide. In consequence, this issue will have a tremendous impact on

hunger and food insecurity (Akwii et al., 2021). For instance, food banks all over the regions had declared a substantial increase in demand in 2020 for more than the double of the normal served number of people, “169% in Africa, 138% in Asia and Oceania, 138% in Europe, 157% in Latin America, and 100% in the Middle East” (FAO et al., 2021).

The emergence of COVID-19 has come up to prove that food donation organizations are crucial and critical entities responsible for addressing issues of food waste, hunger and food insecurity. That being said, more attention to these social organisms should be held to promote more resilient strategies to meet current and future demand and a faster recovery in future occasions. It is time to supply chains to address their challenges and adapt their processes to standards of “flexibility, agility, responsiveness, and resilience” (Kovács & Sigala, 2021).

To capture the challenges nearly faced by humanitarian organizations, the present dissertation aims the analysis of how COVID-19 has changed the supply chain and logistics processes in the particular case of the Porto Food Bank Against Hunger (PFB AH). Additionally, the study will further contribute with solutions and recommendations to build a more agile supply chain process to future turbulent events. Through this learning process of adapting to previous experiences, it will become easier to avoid possible serious outcomes. By assessing which processes had to be changed and adapted, there will be an opportunity to develop a mitigation plan for future events in which it is deemed necessary.

The extant literature researched so far has not yet focused specifically on the challenges of humanitarian supply chain management during COVID-19, and how they can transform the future of logistical processes of humanitarian organizations. Though some typical problems of the food sector industry all around the globe have been mentioned in previous research studies, they do not include the scenario of the city of Porto during the COVID-19 pandemic.

Hence, the research is justifiable and legitimate since it has managerial relevance and interest to provide an intervention plan to be used to succeed in future distressing events. Furthermore, the author’s personal interest in humanitarian logistics is an additional argument to investigate this particular topic.

1.3. Research objectives

To sum up the above problematic section, an opportunity to complement the extant literature was found.

The number of disasters is growing around the world and as a result, the need for and importance of humanitarian logistics (FAO, 2021; Kovács & Spens, 2007, 2011). Thus, humanitarian organizations are crucial to provide their services to individuals living under vulnerable conditions.

The emergence of the pandemic COVID-19 has brought arduous challenges to supply chains and logistic processes.

Hence, the primary purpose of this thesis aims at addressing and evaluating how the processes and logistical operations needed to be modified due to the affection suffered by the impact of the pandemic in the case of the Porto Food Bank Against Hunger.

The final goal of this research is to explore and extract lessons that could potentially be used in future disruptive events, that could be applied specifically in humanitarian logistics in the context of this organization. Therefore, it will be developed a mitigation plan with recommendations and suggestions that will enable the creation of a more agile supply chain to answer humanitarian needs.

Moreover, this research will contribute to the theory of creating an agile supply chain strategy within a humanitarian context, so that it is possible to provide an optimization of the responsiveness to future disastrous occurrences.

1.4. Research question

To serve the purpose of this master thesis, and thus to achieve its objectives, two research questions have been developed.

RQ1: What were the main challenges to Porto Food Bank Against Hunger during the pandemic COVID-19? And how they have affected their logistical processes?

RQ2: What are the lessons that can be applied for future disruptive events to the organization?

1.5. Structure of the dissertation

The structure of the master thesis is divided into 13 main topics.

Firstly, in the introduction chapter, a background description of the study is presented, as well as a problem statement discussion. After this, it is introduced the research main objectives and the two research questions that are intended to be answered within this project.

Secondly, the literature review section explores the extant literature regarding humanitarian logistics and their main associated areas, as well as a comparison with business logistics. Moreover, in the end, a review of literature regarding the topic of COVID-19 in a humanitarian scenario is given, in addition to the main challenges faced in this period by worldwide organizations.

In the 3rd chapter, highlights the research methodology carried out in this dissertation, which includes the topics of, research purpose, research approach, design and strategy and lastly it is mentioned the data collection tools used to conduct the empirical findings.

The followings chapters were drawn to conduct a theoretical background regarding the functioning of the Portuguese Food Banks Federation, as well as the case study of Porto Food Bank. After this, the main findings of the semi-structured interviews conducted, and the final recommendations are discussed.

Finally, the thesis ends with the limitations of the present study, future research suggestions and a final conclusion. After the references section, the transcription of the five interviews conducted as well as the interviews' coding summary can be found in the Appendix.

2. Literature Review

The present chapter of the dissertation report aims to explore the different concepts needed to have a holistic comprehension of the topic and further consolidate the empirical work that will be developed.

Moreover, the structure of this section will be the following: first, it will be explored a frame of reference, where it is presented an overview of how different concepts have emerged; then, it will be analysed the concept of supply chain management, humanitarian supply chain management, business logistics, and humanitarian logistics separately; and finally, the two last areas will be compared. Secondly, it will be presented a review of humanitarian organizations as well as their missions. Then, food bank organizations, their purpose, and their logistical processes will be clarified. Finally, it will be highlighted how the COVID-19 pandemic has impacted supply chain processes and which potential lessons could be learned from the extant literature.

2.1. Frame of reference

Humanitarian aid dates back to the evolution of social structures and the compassionate character of mankind, however, the research in humanitarian logistics and humanitarian supply chain management have long been areas of scant literature. It has only received progressively more interest from the point of view of academics and practitioners in logistics, since the Asian tsunami in the Indian Ocean that happened in 2004. With this event, there was an acknowledgment shift towards logistics in effective relief (Kovács & Spens, 2007; Kunz & Reiner, 2012; Thomas & Kopczak, 2005). Indeed, it is claimed to be a radical shift moment, since the logistics of the time were heavily criticized, and as a result, have substantially been pushed to be improved since then (Kovács & Spens, 2007; Kovacs & Spens, 2012).

Moreover, Beamon & Kotleba (2006), pointed out at the time that, there were no specialist humanitarian logistics journals, and that there was only a small corpus of research on the subject. Besides this, the majority of these research studies come from practitioner journals rather than academic journals or Journals of Business Logistics. Before 2005, significant work on themes such as humanitarian crises around the world, risk management in supply chain disruptions, and disaster-response supply chain methods was hardly published and recognized (Behl & Dutta, 2019). In consequence, the presence of articles in practitioner journals came to demonstrate that more insights into this

emerging topic were needed, as well as more academic research to create a more holistic view of the topic (Kovács & Spens, 2007). In addition, the launch of the *Journal of Humanitarian Logistics and Supply Chain Management*, in 2011, has marked a turning point in the field of humanitarian logistics. Although some studies on the theme have been already released since 2005, these were mainly dispersed. The release of this journal has shifted and increased the diversity, variety, and versatility of the publication of studies linked to the humanitarian supply chain topic (Behl & Dutta, 2019; Kovács & Spens, 2011b).

On the other hand, and according to Behl & Dutta (2019), the topic of supply chain management has been intensively researched. However, its role in humanitarian operations, as well as disaster resilience and its management, has long been overlooked. Despite this, the scenario has not have been always the same and the topic has expanded attention by being discussed in the United Nations, namely for future disruptive events, in what regards risk mitigation and rationalization of disaster relief operations (Behl & Dutta, 2019). As a matter of fact, forecasts dated from 2005's studies (World Conference on Disaster Reduction in Japan, in January 2005) alarmed humanitarian supply chain professionals of a necessity to be better adapted during disaster relief operations, in natural disasters. Besides this, professionals were also called for attention to better comprehend current trends and be prepared for the future. In consequence, better qualification for natural disasters also means better mitigation of possible outcomes of man-made disasters (Wassenhove, 2006).

Furthermore, disasters, whether man-made or natural are expected to increase, having an impact on the normal life of humankind, infrastructures, and economies (Behl & Dutta, 2019; Bhimani & Song, 2016). The number of disasters and their severity are increasing at an alarming rate and constitutes a source of concern for academic researchers. According to Thomas & Kopczak (2005), the rate of growth in disaster-related deaths will increase over the next 50 years. Further, worldwide problems such as the emergency of climate change, financial or political crises, growth of population, economic and social disparity, health pandemics, hunger, and food insecurity are threatening the wellbeing of society and thus, increasing global instability, insecurity, and vulnerability (Ssengonzi & Oginski, 2012).

Therefore, the conjunction of all these circumstances has 'opened doors' for a new important area of research in what concerns the area of humanitarian supply chain and humanitarian logistics. As suggested by researchers, it is almost impossible to forecast

the extent, time, and location of a natural disaster that may harm a region's economy, and a resilient humanitarian supply chain could be one of the most effective strategies to restore normality. Likewise, the human aspect intimately related to the supply chain network turns it unpredictable and thus, worth of studying so that more resilient supply chains can be created (Behl & Dutta, 2019).

Since humanitarian aid does not evolve as fast as man-made and natural disasters emerge, it is of paramount importance that adequate resources and means of help are managed efficiently and effectively to serve the vulnerable group of people affected. Supply networks require appropriate strategies to direct their operations if they deem to be successful. Humanitarian organizations typically operate in unexpected and volatile contexts; thus, resource flexibility and coordination are critical to providing relief, where and when it is required as quickly as possible (Bhimani & Song, 2016). From the point of view of Kovács & Spens (2011a), the field of humanitarian logistics is missing well-founded theories and definitions. Besides this, what has been discovered in business logistics also needs to be adapted to humanitarian logistics.

2.2. Supply chain management

The concepts “supply chain” and “supply chain management” have received great relevance both in academic and practical terms (Mentzer et al., 2001; Pounder et al., 2013). The increased attractiveness of both concepts, “supply chain” and “supply chain management”, can be justified for several reasons, such as the increasingly resort to global sources of supplies, the intensified competition based on quality, and the time of products delivered. In fact, companies have been pushed to look for more effective ways to coordinate the movement of commodities into and out of the organization, as a result of the globalization of supply sources. Thus, a focus on closer relationships with suppliers is essential for such cooperation. Furthermore, today's businesses, as well as supply chains in general, compete more based on speed and quality. Getting a defect-free product to the client faster and more reliable than the competition is no longer considered a competitive advantage, but rather a necessity to keep a place in the industry. Moreover, the increasing importance and demanding nature of supply chain management have fundamentally transformed the structure of international competitiveness, which is now increasingly being disputed between supply chains rather than between individual firms (Mentzer et al., 2001; Pounder et al., 2013; Vokurka et al., 2002). Due to its capacity to reduce the risk and uncertainty involved with international corporate operations, supply

chain design and supply chain management have become increasingly important to the business sector (Pounder et al., 2013). However, there is still a lot of uncertainty about what both terms truly mean (Mentzer et al., 2001; Pounder et al., 2013).

As described by the authors La Londe & Masters (1994), the term supply chain regards the connection of enterprises and partners that pass and exchange products. A supply chain typically involves numerous independent enterprises in the manufacturing and delivery of a product to the end-user. Thus, raw material and component makers, product assemblers, wholesalers, retailer merchants, and transportation companies are possible actors that can be present within a supply chain network. Besides this, the suppliers and the final customers are also considered constituent parts of the supply chain (La Londe & Masters, 1994). Consequently, a supply chain is made up of at least three entities: organizations on a supply side (upstream), on a distribution side (downstream) and the final consumer (Mentzer et al., 2001). Moreover, from the perspective of Christopher (1992), a supply chain is defined as a network of companies, which through upstream and downstream operations, make available value in form of products or services to the final customers. In consonance with Wassenhove (2006), a supply chain is a system based on interactions and interconnections between suppliers, manufacturers, distributors, retailers, and customers.

The supply chain network addresses mainly three types of “flows”: namely, material flows, responsible for the movement of physical products from suppliers until the final customers as well as the other way around, in case of product returns; information flows, which denotes the sending and tracking of orders and which oversee the coordination of the physical fluxes and finally, financial flows, which reflects all the payment methods (Wassenhove, 2006).

When it comes to the concept of supply chain management (SCM), it is defined by some authors as an operational concept responsible for the flow of materials and products, while others merely see it as a management philosophy or a management process that frequently involves executive responsibilities in companies (Mentzer et al., 2001). From another perspective, regarding the definition of supply chain management and its functions, Pounder et al. (2013) denote that there exist three time periods, namely the 1980s, the 1990s, and 2000-present, that contributed to a continuous enhancement of it. These definition improvements are due to several external influential factors, which constitute distinctive features of these time frames. By way of example, the 1980s were marked by the emergence of the personal computer; by the bilateral trade agreement

between the United States and China; an increase in global and world competition. The 1990s was highlighted by the strong emphasis on the emergence of e-commerce; on globalization which refers to the rising economic interdependence of countries throughout the world, as well as the more rapid and extensive dissemination of technology; increased funding in research and development in the SCM industry. The period post-2000 is characterized by recessions, in which when faced with shrinking markets, firms needed to provide as much value to their customers as possible to keep market share, by improving and enhancing their supply chains. It is also emphasized in this period the trade liberalization, where before this agreement, barriers to trade, namely the net effect of import tariffs discouraged being competitive in foreign markets. Hence, the study of the three-time periods has come up with some conclusions, in which from the 1980s to 2000, the transportation or distribution of materials along the supply chain is given more attention than the actual manufacturing process. However, post-2000, definitions of SCM have progressively started to include concepts related to the manufacturing process management, material flow inside the company, transfer of information, and associated logistical assistance both upstream and downstream. To conclude, Pounder et al. (2013) also argue that the lack of agreement on a definition of SCM could last for a long time since supply chain management is not a static discipline but rather a dynamic one. The concepts and techniques that guide it evolve as technology and business practices advance.

The studies of LeMay et al. (2017) come to confirm the aforementioned arguments of Pounder et al. (2013). According to the authors LeMay et al. (2017), the Council of Supply Chain Management Professionals (CSCMP) also acknowledges the ambiguity of the definition of supply chain management, as it is confirmed by the following statement: “The supply chain management profession has continued to change and evolve to fit the needs of the growing global supply chain. With the supply chain covering a broad range of disciplines, the definition of what is a supply chain can be unclear” (CSCMP, 2022). Nevertheless, the CSCMP and its board of directors come to the conclusion that supply chain management encompasses the planning and administration of all sourcing, procurement, conversion, and logistics management activities. Along with this, SCM is also responsible for coordinating channel partners, such as suppliers, distributors, third-party service providers, and customers (CSCMP, 2022; Kovacs & Spens, 2012). Thus, the authors LeMay et al. (2017) have come up with the following definition which matches the theory developed: “Supply chain management is the design and coordination

of a network through which organizations and individuals get, use, deliver, and dispose of material goods; acquire and distribute services; and make their offerings available to markets, customers, and clients” (LeMay et al., 2017:2).

To fully examine this definition and better perceive the set of functions of SCM, researchers have advanced the following conceptual model designed in Figure 1. All traditional business functions should be included in the SCM processes, as a given process refers to the integration of a set of functions to produce a certain outcome. It is important to notice that SCM is a broader term than logistics, referring to the management of a variety of business operations, in which logistics is included. Hence, marketing research, sales, research and development, forecasting, production, purchasing, logistics, information systems technology, finance, and customer service should all be covered in the traditional business functions. In this way, on one hand, at Figure 1 is illustrated the different possible directional supply chain flows (in what regards products, services, information, financial resources, demand, and forecasts). On the other hand, it is also notable that the flow from supplier’s suppliers to customer’s customers intends to ultimately transfer value to satisfy the final customers. It can also be depicted the importance of customer satisfaction to achieve competitive advantage and profitability within the supply chain (Mentzer et al., 2001).

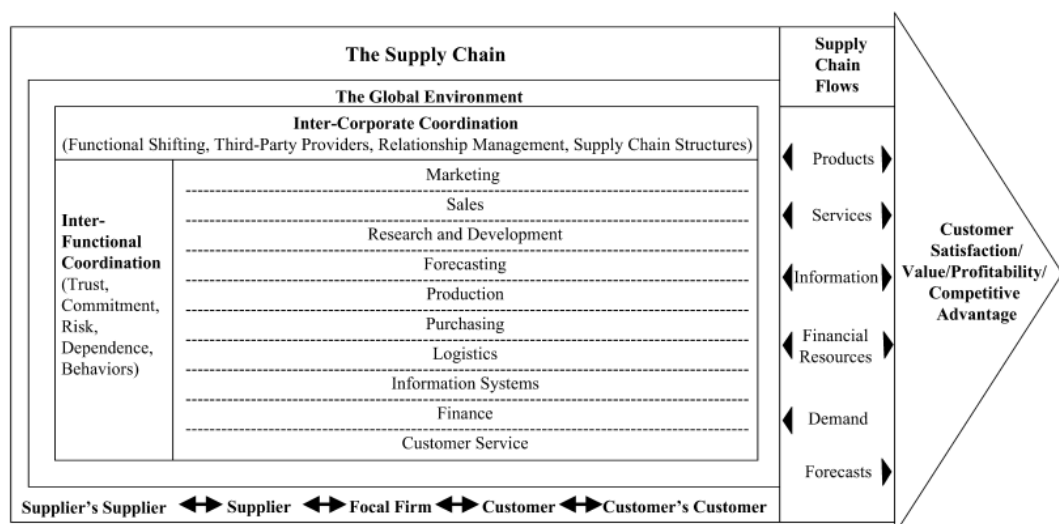


Figure 1 – “A model of supply chain management”, *Mentzer, Dewitt, Keebler, Min, Nix, Smith, and Zacharia, 2001*

Further important to notice, is that this conceptual model emphasizes the importance of including all the typical business functions within the supply chain management planning organizations and processes since, without them, the supply chain management cannot meet its intended purpose. The same applies to the inclusion of all

the supply chain flows (in what regards products, services, information, financial resources, demand, and forecasts) in the supply chain management planning, organization, and processes (Mentzer et al., 2001).

Therefore, in line with Vokurka et al. (2002), a set of five operations performance objectives are required to ultimately deliver value to each client at each stage of the supply chain, as can be seen in Figure 2 (Mentzer et al., 2001). To meet the requirements of end customers, by supplying appropriate products and services when they are needed, at a competitive cost and in accordance with Vokurka and Fliedner (1998), five focus areas where managers should make efforts are:

- **Quality** (quality of a product or service when it reaches the customer)
- **Dependability** (on-time delivery, deliver as promised on time)
- **Flexibility** (chain's ability to cope with changes and disturbances)
- **Agility** (how capable is the supply chain in responding to unpredictable market changes in a dimension beyond flexibility)
- **Cost-efficiency** (the supply chain as a whole incurs additional costs that derive from each operation in a chain doing business with each other)

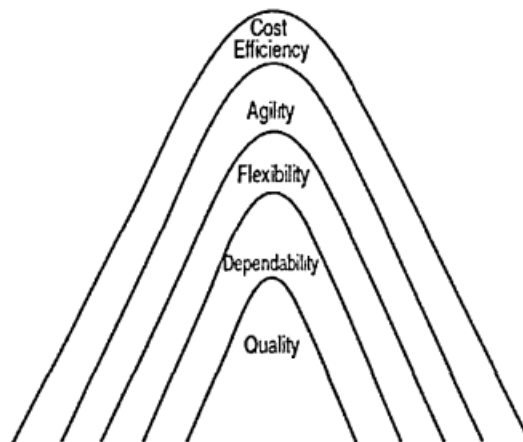


Figure 2 – “Agility Capability Improvement Model/Supply Chain Improvement Model”, Vokurka and Fliedner, 1998

The Agility Capability Improvement Model/Supply Chain Improvement Model developed by Vokurka and Fliedner (1998), considers that enterprises should prioritize their cumulative efforts on quality, dependability, flexibility, agility, and, lastly, cost across the whole value chain. The four first areas, namely quality, dependability,

flexibility, and agility are the precedence factors that allow cost efficiency to be accomplished. The five factors should not be viewed as trade-offs, but rather as complementary and cumulative priorities. At each stage of the supply chain, all the competencies are required to deliver value to the final customers. As a foundation, quality enables future continuous improvements in dependability, flexibility, agility, and efficiency. Customers will receive the right products or services at the adequate moment and at the right price, as this capability development continues (Mentzer et al., 2001).

2.2.1. Business logistics

According to Swanson et al. (2018), even though “logistics” is an older term than “supply chain management”, it is not a broader concept as SCM. Indeed, the Council of Supply Chain Management Professionals (CSCMP) has stated that the two denominations are different from each other, being that logistics is a constituent part of supply chain management. Apart from this, Mentzer et al. (2001), in line with what CSCMP has stated, also made a distinction between logistics and supply chain management, acknowledging that logistics is one of the roles that supply chain management encompasses. Furthermore, Rushton et al. (2014) argue that the concept of “supply chain management” is currently used as an “umbrella” term to define all the various logistics functions, in which logistics is included.

Business logistics is the department in charge of organizing, implementing, and overseeing processes for the safe and timely delivery of raw materials, inventory for work-in-progress, finished goods or services, and related information from the point of origin to the point of consumption in order to satisfy consumer demands (Kovacs & Spens, 2012). Moreover, inbound and outbound movements are also included in this definition (CSMP, 2022). Inbound logistics concerns all the activities that consist of transportation of materials to a certain place (plant, warehouse, or retail store), for further development or reselling. On the other side, outbound logistics activities are those that deal with the management, sale, and delivery of finished goods to end-users (Kelesovska, 2020). Additionally, managing third-party logistics service providers, managing a fleet, handling commodities, following up on orders, designing a logistics network, and anticipating supply or demand are all examples of logistical tasks. Additionally, the logistics function includes the following activities: sourcing and procurement, manufacturing planning and scheduling, packaging, and assembly. Therefore, logistics management is a process that integrates and optimizes all logistical actions while also

integrating them with a different set of tasks, such as, for example, marketing, sales, production, finance, and information technology (CSMP, 2022).

Business logistics, according to Wassenhove (2006), is a planning framework for the management of material, services, information, and capital flows. It includes the increasingly sophisticated information, material, communication, and control systems needed in today's business environment.

Rushton et al. (2014) stressed that logistics is diverse, dynamic, and a flexible function and must change according to the various restrictions and requirements imposed on it and concerning the environment in which is inserted. For instance, every industry and sector have its own peculiarities, and in turn, for each organization in that industry or sector, there are different approaches and variations in strategy, size, type of products being handled, and market coverage. Thus, according to the authors Rushton et al. (2014), logistics concerns the efficient transfer of commodities from the source of supply, via the location of manufacturing, to the point of consumption in a cost-effective manner, while offering satisfactory service to the consumer.

Moreover, according to the same authors, Rushton et al. (2014), it is possible to idealize a common scheme like the one represented in Figure 3. The image depicts the key processes that constitute logistics in almost every business. In the figure, it is also emphasized that both logistics and supply chain areas are not only concerned with physical flows, storage of raw materials or finished products, and distribution of goods, but also with process and information flows. In addition, it is also worth noticing the important factor defined as reverse logistics (physical inbound/reverse), which concerns the flow of used products from customers back through the supply chain system. What is more, in the system represented, it is possible to confirm the argument defended by La Londe & Masters (1994), which likewise Rushton et al. (2014), considers that supply chain management includes the management of the upstream (supply side) and downstream (demand side) entities in the network.

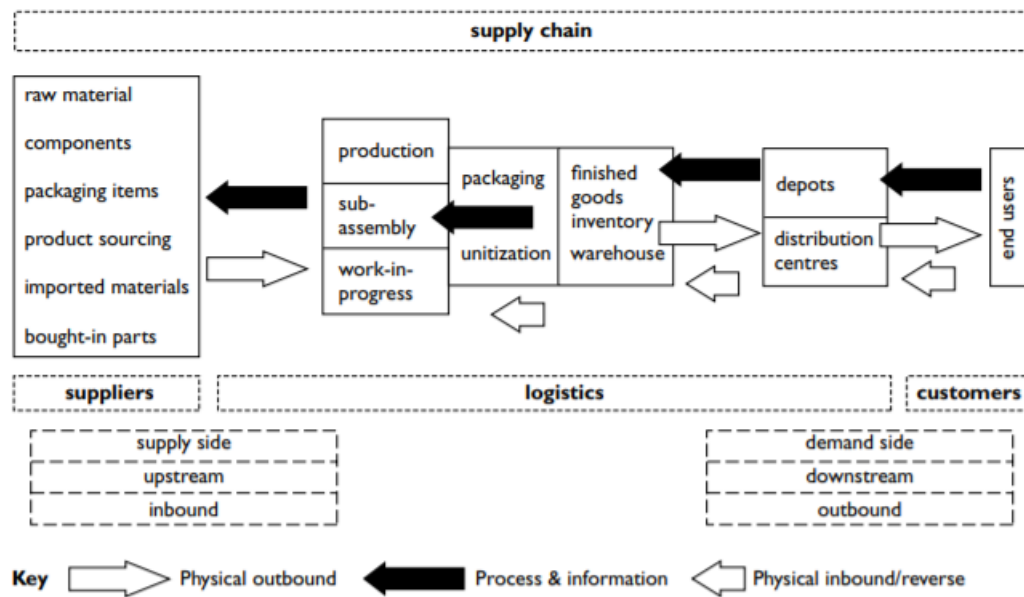


Figure 3 – “A representation of the major flows in logistics”, *Rushton et al, 2014*

Finally, the key logistical activities highlighted by Rushton et al. (2014), that contribute to creating value through the supply chain, and allow differentiation, so that competitive advantage is achieved are the following:

- **Transportation** – mode of transport to use, type of delivery operation, route scheduling
- **Information and control** – design of systems, control procedures, forecasting
- **Storage, warehousing, and materials handling** – location of warehouse decisions, number, and size of warehouses, type of storage, material handling equipment
- **Inventory** – what, where, and how to stock the items
- **Packaging and unitization** – unit load, protective packaging, handling systems, type of packaging materials to use

All these functions and sub-functions must be organized methodically, both in terms of where the company is located and the overall scope of the distribution system. In this network of activities interconnected, the failure of one of the components may create an impasse across the entire supply chain (Rushton et al., 2014).

From another point of view, Waters (2003), describes the following activities as being the main ones that are led by logistics:

- **Procurement or purchasing** – whenever an order is issued, it is done by the procurement department, where a purchase order to a supplier is released. The procurement or purchasing department is also responsible for ensuring convenient and appropriate suppliers, with whom is supposed to initiate the negotiation terms and conditions, delivery deadlines, establish insurance and payments methods, in accordance with both parties, the customer (the organization), and the suppliers.
- **Inward transport or inbound logistics** – an activity that ensures the movement of materials from external parties (for instance, suppliers) to the firm's plant. Here, it is also needed to be decided the type of method of transport (road, rail, air); the transportation route, and lastly, safety and legal conditions should be met.
- **Receiving** – function responsible for ensuring that the materials delivered by suppliers actually match what was initially ordered, acknowledges receipt, unloads goods from delivery vehicles, inspects materials for damage or defects.
- **Warehousing/stores** – storage of goods in adequate places until they are needed for production or distribution to the final customer. Ensure that the goods are kept in the appropriate conditions needed and that are packed as it is required.
- **Stock management** – the department that sets the policies for inventory management. It controls which materials should be sent to the stores or final customers, overall investment, customer service, stock levels monitoring.
- **Order picking** – consists of collecting the right products and in the right quantity, to satisfy the needs expressed by customers' orders. The products are collected, consolidated, and packed into a single unit, and moved to the departure area, where the delivery vehicles are expected to collect the orders.
- **Materials handling** – activity responsible for transporting items within the organization. It transports materials from one activity to the next. Materials handling aims to provide efficient movements with short travels, appropriate equipment, minimal damage, and customized packing and handling where necessary.
- **Outward transport or outbound logistics** – an activity that ensures the movement of materials from the plant to be delivered to final customers.

- **Recycling, returns, and waste disposal (reverse logistics)** – activities in which materials are returned back to the organization since there might be some problems with the final products initially delivered (faulty, wrong quantity, wrong type). In addition, some goods may not be good to be reused, and when this is the case, they are used for recycling or safe disposal.
- **Location** – several logistical activities may be performed in different locations than the warehouse, thus, logistics must find the most appropriate locations for these activities or take part in this kind of decision. It may also advance decisions on questions related to the size or number of the facilities.
- **Communication** – parallelly to the physical flow of materials, there also exists the flow of information in what concerns products, customer demand, materials to be moved, timing, stock levels, availability, difficulties, costs, and service levels, among other things.

Hence, the paramount interest to succeed and provide an effective flow of materials through the supply chain is to ensure that all the activities are connected to each other, seamlessly rather than create boundaries between activities and functions (Waters, 2003).

In conclusion, Ballou (2004), has proposed “The Logistics Strategy Triangle”, which demonstrates the three key logistical strategies that have as a common objective, to achieve the satisfaction of the customer service goals. In this framework, logistics management is seen as performing the tasks of planning, organizing, and controlling. Planning focuses on the goals that each company sets. The organization brings all the resources together to achieve the company's objectives. The control aims to measure the company's performance and adopt corrective measures. As we can see in Figure 4, logistics management follows a primary triangle decision that involves location, inventory, and transportation planning, with the customer's needs being the result of these strategies (Ballou, 2004).

These ‘problematic’ areas are interrelated and should be planned, controlled, and organized as a unit, although it is common to plan them in separately. Each of them has a significant impact on the logistical system design. The customer service levels define how the logistical processes should happen, thus, this is the focal point where efforts should be made, so that an appropriate level of service to customers could be determined (Ballou, 2004).

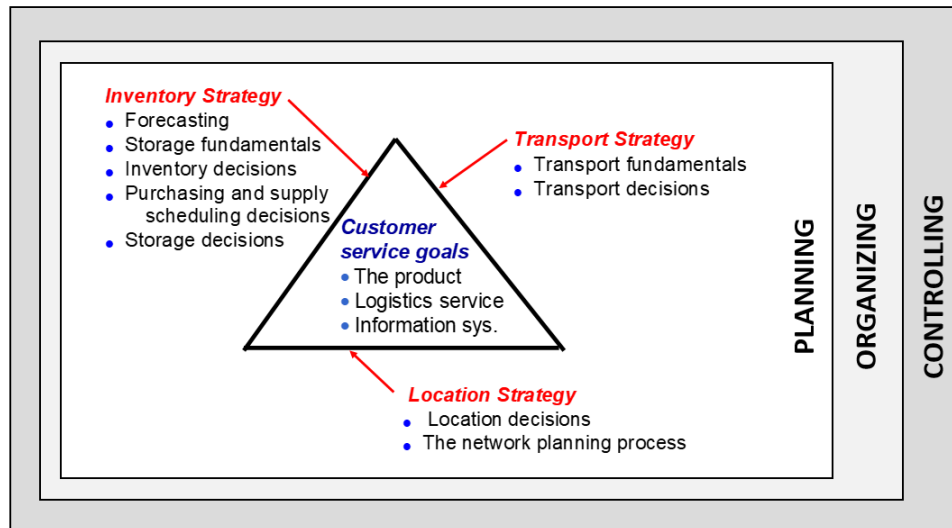


Figure 4 – “The logistics strategy triangle”, *Adapted from Ballou, 2004*

The location strategy concerns the choice of the geographic locations of points of stock and supply centers and the number and size of these facilities, which are elements that will take part in the total distribution costs. Thus, finding the lowest cost allocation or alternative increased profitability is the essence of the facility location strategy. In what regards to the inventory strategy, it concerns decisions that refer to how inventories are managed. The strategy used by the company will end up influencing the location of the facility and, therefore, must be considered in the logistics strategy. Lastly, transport strategy considers the selection of modes, the volume of each shipment, the routes, and the schedule. These are decisions on which factors such as proximity, or distance, between warehouses, customers, and factories are at stake. However, in turn, these factors also influence the location strategy as well as the inventory strategy (Ballou, 2004).

Thus, for instance, a good location strategy depends on how stocks are planned on the result of stock levels, and on the selection of transport services. These strategies are the core of a planning and efficient decision-making in terms of logistics. Customer service levels, location of facilities, inventory, and transport decisions are among the most important areas in terms of planning, given the impact that these decisions can have on profitability, cash flow, and return on investment (Ballou, 2004).

2.3. Humanitarian supply chain management

As noted by Kovács & Spens (2007) and cited from Hoffman (2005), humanitarian supply chains are the most dynamic supply chains in the world and, in addition, when it comes to humanitarian logistics, there is not a settled and fixed supply

chain (Kovacs & Spens, 2012). Parallely to the term “supply chain management”, the concept “humanitarian supply chain management” is defined as being the process of obtaining and delivering the needed supplies and services at the affected locations, at the right time, while ensuring the best value for money; in the immediate aftermath of any disaster or reconstruction situation (Kovács & Spens, 2011b). Similarly, to the supply chain management field concept, humanitarian logistics, is also a constituent part of a wider concept, namely humanitarian supply chain management. Kovacs & Spens (2012), further includes into the definition of humanitarian supply chain management, the coordination and collaboration functions with supply chain entities, third-party service providers as well as other humanitarian organizations. Moreover, humanitarian supply chain management is the conceptual area responsible for the coordination and integration of the different internal and external stakeholders (Cozzolino et al., 2012). The interaction with several actors within the supply chain to deliver goods and services constitute an integrated network of partners as suppliers, government, military, partner organizations, and community (Shafiq & Soratana, 2019b). In other words, the humanitarian supply chain management processes are similar to those of supply chain management, however, they do not include the process of manufacturing goods.

Hence, accordingly, both logistics and supply chain management are essential for a quick catastrophe response. However, while humanitarian logistics is concerned with moving something or someone from a place of origin to a final destination; humanitarian supply chain management is ultimately concerned with the inter-relationships that enable such movement. Thus, humanitarian supply chain management is a unique feature of any humanitarian organization, on which depends the success or failure of any humanitarian operation (Cozzolino et al., 2012).

Therefore, depending on the type and scale of the disaster, the humanitarian supply chain can assume various formats, collaborating with a set of different actors from time to time. However, a normal humanitarian supply chain follows the same patterns on the different occasions, by transferring emergency items products from suppliers to beneficiaries, through the supply chain to meet humanitarian needs (Kovacs & Spens, 2012). Moreover, Wassenhove (2006), argues that the ultimate goal of humanitarian supply chain management is to be capable of responding efficiently to various interventions as rapidly as possible and within a short time frame. As a result, supply chains must be "multiple, global, dynamic, and temporary."

2.3.1. Humanitarian logistics

Previously, and as briefly explained, humanitarian logistics concerns the movement of persons, materials, and resources in a timely way through an aid supply network, with the final aim of attending as many people as possible (Balcik & Beamon, 2008). In addition, in accordance with Bhimani & Song (2016), humanitarian logistics involves a group of activities that focus on conveying information, products, and services for the express objective of assisting target beneficiaries, environments, and societies. Moreover, according to Thomas & Kopczak (2005), humanitarian logistics is “the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption to alleviate the suffering of vulnerable people” (Thomas & Kopczak, 2005:2). In addition, the concept refers to the processes and mechanisms involved in deploying people, resources, skills, and knowledge to assist catastrophe victims (Wassenhove, 2006).

Moreover, the concept of humanitarian logistics is a consolidated term that encompasses several different operations, like for instance disaster relief and uninterrupted and continuous support in developing areas. Although humanitarian logistics encompass diverse operations depending on the type of catastrophe, all of them share a common objective, which is to support people to survive and minimize their suffering. For instance, development assistance in a certain local region, hunger relief, and refugee camp management is vastly different from the type of assistance required in the aftermath of a natural disaster, that is denominated as disaster relief (Kovács & Spens, 2007).

The world is constantly being exposed to various dangers, being them derived from nature or human beings and their technological advancement (Kovács & Spens, 2007). Hence, disaster can be defined as an event that disrupts the normal function of the system or the community as a whole and jeopardizes its priorities and goals. The disasters can turn to be either natural or man-made and can provoke a great impact on people, infrastructures, the environment and can go beyond the responsiveness ability of the local. Both types of disasters can be classified as “sudden-onset”/ “short term” or either “slow-onset”/ “long term” as it is illustrated in Figure 5 (Wassenhove, 2006).

	Natural	Man-made
Sudden-onset	Earthquake Hurricane Tornadoes	Terrorist Attack Coup d'Etat Chemical leak
Slow-onset	Famine Drought Poverty	Political Crisis Refugee Crisis

Figure 5 – “Explaining disasters”, Wassenhove, 2006

Thus, correspondingly, two branches of humanitarian logistics can be differentiated: disaster relief for sudden onset/short term events and continuous aid work for slow-onset/long term events (Kovács & Spens, 2007). Nonetheless, sometimes both terms can be overlapped, as for instance, famine relief is sometimes included in the definition of "disaster relief". However, this term is usually reserved for unforeseen and sudden-onset catastrophes, such as natural disasters that can either start quickly or slowly and can be originated from a geophysical, hydrological, climatological, meteorological, or biological form (earthquakes, avalanches, tsunamis, hurricanes, floods, fires, volcano eruptions, tornadoes) and very few man-made disasters, such as civil conflicts, terrorist acts or nuclear accidents (Kovács & Spens, 2007; Kunz & Reiner, 2012; Wassenhove, 2006). On the other hand, slow-onset events can vary from famine, drought, poverty, epidemics, or plagues from animals, to political and refugee crises (Wassenhove, 2006). Surprisingly, according to disaster management experts, relief operations account for 97% of human-made disasters, whereas only 3% are due to natural disasters (Wassenhove, 2006).

Similarly, to what is argued by Kovács & Spens (2007), where two branches of humanitarian logistics can be distinguished, Fink & Redaelli (2011) purposes that international aid can also be separated into two categories: humanitarian assistance or emergency aid and official development assistance (ODA). Hence, humanitarian assistance or emergency aid serves the purpose of disaster relief, whereas development assistance matches with continuous aid work. In other words, humanitarian assistance is intended to provide immediate response and distress alleviation to people who are temporarily in need of support as a result of natural disasters, technical catastrophes, or conflicts. On the other hand, development assistance concerns the type of aid that goes to

developing countries or other countries which need help to improve economically and socially. Thus, the primary goal of ODA is to eradicate poverty and its root causes, which necessitates the significant participation of recipient countries in the development and implementation of intermediate to long-term policies and programs. Finally, it must be remarked that humanitarian assistance or emergency aid is greatly different from development assistance, as it is a form of aid governed by well-founded ethical foundations. This means that the principles governing humanitarian assistance have to reflect the unconditional character of emergency relief, where individuals, regardless of ethnicity, country, or citizenship, are the focus of humanitarian help (Fink & Redaelli, 2011).

Usually fewer than five years after the calamity first manifests, disaster relief is initiated relatively swiftly and ends abruptly. On the other hand, ongoing assistance is typically a long-term solution and can continue for decades following the catastrophe. Usually, this type of work is initially developed in the reconstruction phase, which corresponds to the immediate stage after a disaster takes place. It mainly focuses on development assistance and is only seldom marked as an emergency (Kunz & Reiner, 2012).

The importance of humanitarian logistics in disaster relief operations is influenced by a number of factors (Kovacs & Spens, 2012). First and foremost, it is crucial to offer the afflicted population an efficient and timely frontline response. Second, since transportation and procurement are both involved, it can be among the most expensive parts of a relief effort (Thomas & Kopczak, 2005). In fact, 80 percent of the work in humanitarian aid missions is thought to be devoted to logistics (Wassenhove, 2006; Kovács & Spens, 2007). And lastly, since the logistics department is responsible for tracking items throughout the supply chain, it is frequently the source of data that may be examined to give post-event learning. Thus, logistics data plays a key role in better improving their performance in current and future disaster relief operations (Thomas & Kopczak, 2005).

Disaster relief actions mostly happen under very extraordinary circumstances, with an unstable and destabilized environment and infrastructures. Besides this, the demand for goods and resources within these events is unpredictable, which makes humanitarian logistics a singular concept and totally distinguishable from business logistics. It is further important to notice that according to Thomas & Kopczak (2005), regrettably, catastrophe relief is and will remain a growing sector. Due to environmental

deterioration, growing urbanization, and the spread of HIV/AIDS in developing countries; natural and man-made disasters are anticipated to increase five-fold over the next fifty years (Thomas & Kopczak, 2005). As a result, humanitarian aid delivery is considered to be a raising significant sector (Kovács & Spens, 2007).

Efforts to provide disaster relief, whether immediate after a natural disaster or overtime, rely on the efficient acquirement of the right supplies locally, regionally, or globally, the timely arrival of supplies, whether by land, air, or sea, and the security and storage of the goods so that they can be made accessible to those who need them (Thomas, 2008). Thus, in order for humanitarian logistics to succeed, it is not enough to be efficient, as it is necessary to be effective, that is, the aid must reach its final destination correctly and in a timely manner. According to various authors, namely Kovács & Spens (2007), and Bhimani & Song (2016), disaster management can be divided into different phases. However, different authors distinctively name the phases and numerate them differently. Moreover, they also refer that each phase requires a specific set of resources and skills. For instance, while Kovács & Spens (2007), classifies the phases of disaster relief into three different steps, specifically, preparation or preparedness, immediate response, and reconstruction which are represented in Figure 6; Bhimani & Song (2016), considers that disaster management can be divided into four states of what is mentioned to be the humanitarian life cycle: mitigation, preparedness, response, and recovery.

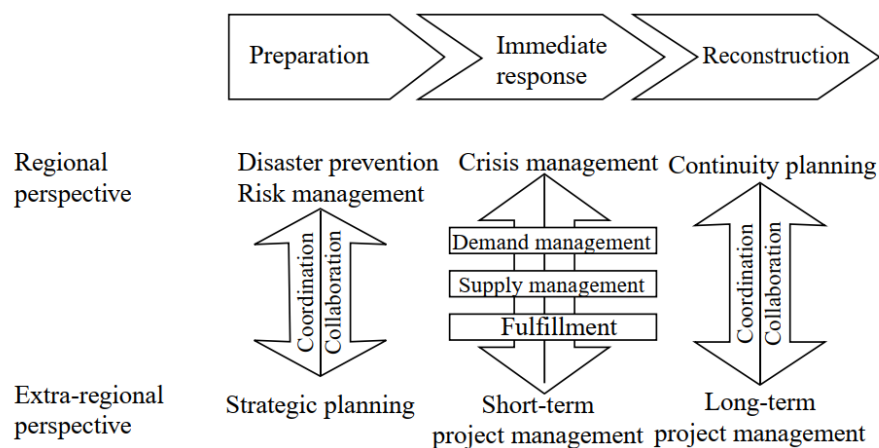


Figure 6 – “A framework for disaster relief”, Kovács & Spens, 2007

Starting by briefly explaining the three phases of disaster relief operations conceived by Kovács & Spens (2007), the first one being addressed is the preparedness one, which is analysed by the authors as a crucial phase that encompasses planning

activities that precede the occurrence of the event, with a final goal of improving the operational response capacity during an emergency. By doing this, the intention is to work on a prevention plan to avoid the worst possible consequences of a disaster by elaborating on the physical network, IT systems, network design, and collaborations with other entities. Thus, the formulation of measures and strategic plans, both to avert disasters and to put into effect when one occurs, takes place during the preparation phase. This phase also marks the beginning of diverse actors' ability to collaborate with each other, to improve coordination, and reduce inefficiencies, which can be a difficult undertaking (Cozzolino et al., 2012). Then, the immediate response stage refers to the phase where the plan defined in the previous step, is put into action. Thus, according to Cozzolino et al. (2012) there are two straight objectives, to act by responding with the “silent” network while reinstating basic services and products delivery, to the greatest number of people in the shortest amount of time possible. The “silent” network involves the interconnections carefully created with donors, suppliers, NGOs, and other partners in the first phase that is only activated when the disaster strikes. First, this network aims to put in place a contingency plan that is suited to the type and size of the event. Regarding the second goal and in accordance with Kovács & Spens (2007), the immediate response aims to manage humanitarian demand, supply, and fulfilment while working under limited resources and information (Cozzolino et al., 2012). Finally, the reconstruction phase is characterized by the restoration of the affected services aiming to return to the normal activities that were taking place right before the disaster happened and, if possible, with functional improvements. Thus, this final stage addresses the problem with a long-term perspective for diminishing the issues brought by the disaster that can have serious effects on the affected population. One of the problems that are most common in this last step, is the lack of funding due to the shift in focus from speed to cost cuts along the phases (Cozzolino et al., 2012; Kovács & Spens, 2007; Tomasini & Wassenhove, 2009).

In what concerns continuous aid work, it was purposed by Kunz & Reiner (2012), that the extant humanitarian logistics literature does not give a lot of focus and attention to areas like continuous humanitarian relief operations, slow-onset crises, and man-made catastrophes. While countless articles cover various aspects of disasters and their different phases, just a few focuses specifically on disaster rehabilitation.

As said, previously, the field of humanitarian logistics has been thoroughly studied since 2004, however, continuous aid work has been disregarded in operational contexts. According to the authors, several reasons can justify this fact, such as,

continuous aid, presumably enables better planning and continuous improvement initiatives, and it appears to be less difficult to handle than acute catastrophe relief. Another defence is that ongoing relief efforts are more challenging to analyse since they necessitate a multi-period strategy, which is more difficult to model. Lastly, the current academic works on catastrophes, primarily focuses on sudden onset disasters, with only a few studies particularly covering slow onset disasters. Although slow onset calamities like drought, starvation, and floods give people more time to react, they can have greater implications for people due to their huge scale (Kunz & Reiner, 2012).

As a result, even when dealing with slow-onset crises, proper logistical planning and operation is essential. Thus, future studies should focus on the unique characteristics of slow-onset calamities such as wars, droughts, and famines, which have been overlooked. Along with this, Kovács & Spens (2011a), states that humanitarian help is frequently integrated into long-term economic development programs, through capacity building and local procurement. Therefore, this argument suggested by the authors, emphasise the need for additional literature that should be conducted by researchers on topics related to slow onset man-made disaster and on ongoing help logistics, such as partnerships with local businesses and the integration of aid efforts into an area's economic development. Moreover, the authors have also concluded that a greater focus has been given to disaster preparedness and disaster response phases, in what regards relief operations for sudden onset natural disasters. Based on the extant literature analysis, more consideration should also be given to logistics in the reconstruction phase following a catastrophe (Kovács & Spens, 2011a; Kunz & Reiner, 2012).

To conclude, humanitarian logistics is fundamental to serve as a connecting link between “disaster preparedness and response, procurement and distribution, and between headquarters and the field” (Thomas, 2008:4). Thus, logistics in the humanitarian context seeks for the maximum efficiency and speed in the distribution of major aid programs such as health, food, shelter, water, and sanitation. In addition, it also handles the constant track of all goods through the supply chain and encourages the data collection and information management, which reflects on current and future performance. The logistical data collected is further useful to assess and reflect on the entire execution, from the effectiveness of suppliers and service providers of transport to the cost and timeliness of response, and the suitability of donated goods (Thomas, 2008). Thus, logistics plays a key role in humanitarian supply chains as it influences the efficacy and speed of future as well as existing operations. Even though it is one of the most expensive aspects of a relief

effort, focusing on the logistics of humanitarian help could mean the difference between success and failure in a humanitarian operation (Wassenhove, 2006).

2.3.2. Actors in supply networks of humanitarian aid

Kovács & Spens (2007) consider that the actors participating in the humanitarian supply chain network can be categorized into six groups, namely: donors, aid agencies, other non-governmental organizations, governments, armed forces, and logistics providers as it can be observed in Figure 7. Aid agencies control the humanitarian supply chain as they function as a bridge between suppliers (donors and logistics providers) and beneficiaries (affected population). The participation and involvement of so many actors contribute to enhance the level of complexity in which the logistical relief operations already have to deal with (Kovács & Spens, 2007; Oloruntoba & Gray, 2006). In addition, Wassenhove (2006), also emphasizes the problem of having to deal with a huge number of diversified donors. Indeed, in the humanitarian context, many actors have different motives to participate in the disaster relief network and are uninterested in the benefits of meeting demand. Besides this, all the stakeholders in question might not share a common political, ideologies and religious principles. This underlined aspect may lead entities to being striving for media and donors' attentions. Hence, the most difficult task is to bring them together without jeopardizing their mandates or convictions (Kovács & Spens, 2007; Oloruntoba & Gray, 2006; Wassenhove, 2006).

Therefore, the aid agencies are the entities responsible for reassuring the suffering of the vulnerable population, gather efforts to effectively help reduce poverty and achieve sustainable development (World Vision, 2015). The major organizations are global players, but there are numerous smaller regional and country-specific relief organizations as well, which have their own political motivations for assisting those in need (Thomas & Kopczak, 2005). Hence, aid agencies can mainly be divided into three main groups: bilateral organizations; non-governmental aid agencies, and multilateral organizations (World Vision, 2015).

Bilateral aid concerns organizations receive funding from the government in their own countries, to later provide assistance to developing countries. Thus, in other words, it concerns the assistance given by a government or a group of governments directly to another country or a group of countries. Non-governmental aid is help provided by organizations, which obtain their funds mainly by public donations from individuals and businesses. NGOs are non-profit civil society associations with specificities that

differentiate them from the government and from other organizations and/or private institutions. Its creation is related to different conditions, such as different traditions and cultures, and are classified according to the activities they carry out. However, they are guided by the principles of respect for Human Rights and encourage the participation of civil society, as they believe in the importance of solidarity action towards the communities to which they direct their interventions. Besides this, NGO agencies may include three focus areas of work, namely: humanitarian relief work responding to catastrophes, by providing food, water, and shelter; long-term community development work which seeks to improve underdeveloped communities; and advocacy and education work which aims to persuade business and government policies to help poor populations. Lastly, multilateral aid regards the provision of funding by multiple governments to international organizations such as United Nations (UN), World Health Organization (WHO), World Bank, and International Monetary Fund (IMF) (World Vision, 2015).

Donors are regarded as clients since humanitarian organizations rely on them to carry out their operations (Oloruntoba & Gray, 2006). Thus, these important actors are the ones who contribute with physical or monetary donations. The donations may come from countries, but also from private or public companies and agencies, individual donors, foundations. Then, host government also constitutes an important actor that a lot contribute to the proper functioning of the activities of the humanitarian organizations in the affected area, since they are the ones who manage and control assets such as warehouses and fuel depots and can have an influence in resorting to the help of another countries. Another set of entities that might help or complicate the operational success of humanitarian logistics operations are host nation logistics or regional service providers (Kovács & Spens, 2007; Thomas & Kopczak, 2005). The remaining actors include the military, which can provide crucial assistance with communication, logistics and planning capabilities; other non-governmental organizations (NGOs) and logistics providers, which participate in relief operations by assembling, transporting, storage and distribute goods from donors to the affected ones by disasters. Likewise, host or regional logistics providers may have an impact on the operational success of humanitarian logistics activities (Kovács & Spens, 2007).

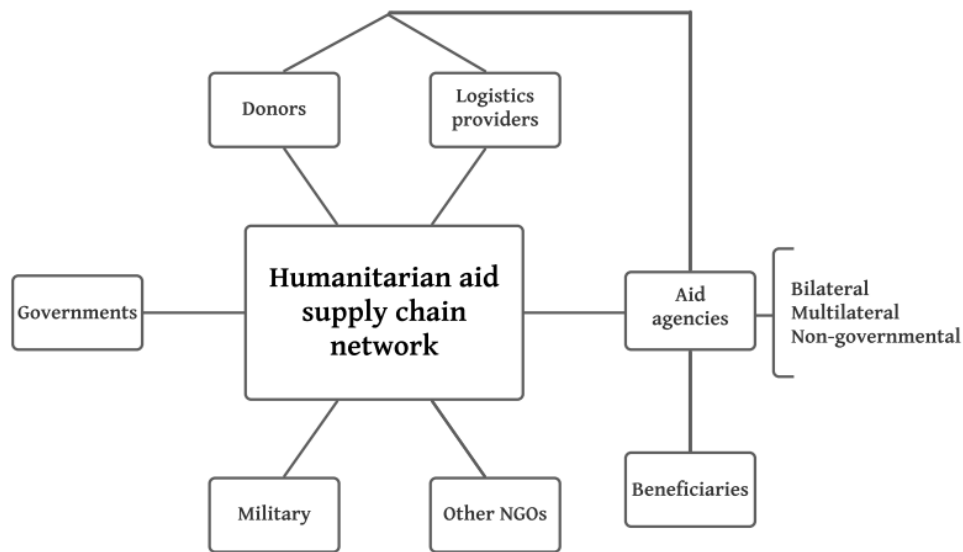


Figure 7 – “Actors in the humanitarian aid supply chain network”, *Adapted from Kovács & Spens, 2007*

2.3.3. Challenges of humanitarian logistics

Despite the increased awareness of the importance of humanitarian logistics after the 2004 Asian Tsunami, according to research done by the Fritz Institute and conducted by Thomas & Kopczak (2005), it was shown that only few aid agencies have faced the creation of high-performance logistics and supply chain operations as a crucial priority. Hence, factors like the unpredictable nature of disasters and the nature of funding, have resulted in significant employee turnover, disintegrated technology, manual and undefined processes, and a lack of institutional learning over time for most of the aid organizations. In consequence, relief activities turn to be less efficient and effective, and help to beneficiaries is most of the times delayed or reduced (Thomas & Kopczak, 2005).

Accordingly, there are external and internal limitations that hinder the evolution and progress of knowledge within the humanitarian context, and that limit the performance of humanitarian supply chains (Thomas, 2008; Thomas & Kopczak, 2005).

Concerning the external pressures that hamper the growth and operational activities of humanitarian organizations, there are two branches that can be distinguished: from one hand, there are increasing requests of vulnerable people as the number of disasters and simultaneous operations around the world is increasing, challenging the

existing resources of the humanitarian community; on the other hand, donors' expectations is increasing, and they call for accountability. This means that, donors are becoming more demanding in what concerns performance and impact of their donations. As well as this, the rivalry for donor financing is becoming more severe as the number of aid organizations grows, and evidence indicating the donor financing impact is likely to be the differentiator, when it comes to the decision of which aid agencies the donors should fund. Balcik et al. (2010) and Thomas & Kopczak (2005) further add that uncertainties such as the type of disaster, the location, the intensity, and the scope present a huge challenge in the establishment of mechanisms of flexible and efficient coordination. Other important information, which in most cases, is not available, it is the characteristics of the infrastructures and the population characteristics, adding the impossibility of predicting in advance the scale of the damages and, finally, the unpredictable political environment of the local. All these factors pose limitations when humanitarian supply chains want to achieve their best outcome (Balcik et al., 2010; Thomas & Kopczak, 2005).

Regarding the internal limitations, there are a set of accepted and intrinsic challenges that rule the area of humanitarian logistics. Starting, by the lack of recognition of the importance of logistics, there are two broad types of activities within humanitarian organizations: programs and support services. Programs concerns all the frontline activities with the intention of directly helping the beneficiaries; whereas support services refer to all the tasks that are performed as "back office", with which the programs could not survive without, such as logistics, technology, finance, communication, human resources. However, most of the times donors do not perceive the importance of the back-office activities and prefer to fund the program activities, where contributions go directly to the beneficiaries. In other words, donors are more likely to contribute funds for visible or concrete achievements than for logistics and supply chain management system preparedness or development. As a result, the focus is on short-term direct relief rather than long-term investment in systems and processes that would rather cut costs and improve relief effectiveness. Thus, in the end, logistics and other support services may lack sufficient capital funding for strategic catastrophe preparedness, adequate preposition of inventory, infrastructure and warehousing facilities investments, and information systems development (Baporikar & Shangheta, 2018; Kovács & Spens, 2007; Thomas, 2008; Thomas & Kopczak, 2005). Then, regarding the lack of specialized human resources, it is pretty common that in the humanitarian relief world, individuals that

choose this type of careers come from diversified backgrounds. However, their background and valuable skills come from extensive experience in multiple disaster situations rather than from formal training in the logistics field. While this view is changing in major international organizations, the trend toward "professionalization" of logistics has been through a sluggish pace since field experience is valued far more than formal logistics training (Kovács & Spens, 2007; Thomas, 2008; Thomas & Kopczak, 2005). In what concerns the inadequate use of technology, in the context of humanitarian logistics and humanitarian supply chain management, it is yet a very undeveloped field, as most of the processes are still manual. The incapacity of IT employees at headquarters to comprehend the needs of the field, funding restrictions, organizational culture, the importance of financial management in decisions regarding software used in companies, and the need to maintain networks secure are the primary reasons for the slow progress and development of IT, according to humanitarian logisticians. Thus, similarly to the business sector, where supply chain technology has allowed for great improvements by collection historical data which allows a greater knowledge of the processes; developing flexible technology solutions will enhance responsiveness by boosting the knowledge management, performance monitoring, and process learning in the field of humanitarian logistics (Kovács & Spens, 2007; Thomas, 2008; Thomas & Kopczak, 2005). Regarding the lack of institutional learning, it is emphasized that, given the organizational culture and the critical environment in which these organizations operate, there is not much time for knowledge sharing or creation. Thus, due to the intensity of relief operations, significant turnover, and the crisis-oriented nature of disaster response, there is a lack of time to reflect and improve on what went wrong in certain operations. In addition, the logistics personnel turnover is known to be very high, which does not allow the knowledge transition from lessons learned in disaster situations to the next ones. Lastly, due to the fierce competition between humanitarian organizations for capital funding, there seems to not exist a lot of collaborations and coordination between partners. Even though many of them confront similar issues and are familiar with or aware of one another, they rarely encounter or speak, unless it is during a disaster response operation (Thomas, 2008; Thomas & Kopczak, 2005).

Accordingly, to humanitarian logistics make progress with a long-term perspective, humanitarian organizations have to address the structural factors mentioned above. While a short-term operational focus is also needed, where the movement of basic items to disaster locations is ensured; the strategic goal that aligns with a long-term view,

must rely on collaborations with other partner organizations from the same sector, while advancing knowledge in areas of information sharing, technology, measurement, community, and positioning. In addition, humanitarian entities should also be focused on providing timely data and analyse it accordingly, to get insights into how to improve operations, while promoting ongoing learning and performance measurement. Thus, creating a community, where the share of operational knowledge is encouraged, is key to adapt to the future, rather than being stuck and limited to responding to the present (Thomas, 2008; Thomas & Kopczak, 2005).

2.4. How do humanitarian logistics differ from business logistics?

The final objective of this section is to find the differences and similarities between traditional business logistics used in profit-organizations, and humanitarian logistics, used mainly in humanitarian institutions, non-profit organizations. Moreover, it will also be emphasized that normal businesses can take lessons from perceiving how humanitarian logistics works and vice versa (Wassenhove, 2006).

As in the business sector, a humanitarian organization encompasses a large range of activities. However, humanitarian logistics is markedly different from the traditional business logistic process, since its primary purpose goes beyond the generated profit (Kovács & Spens, 2007). In terms of the desired outcome, business logistics has a goal of increasing profits and following market trends, whereas humanitarian logistics aims to alleviate the suffering of those who are most vulnerable by restoring self-sufficiency (Thomas & Kopczak, 2005). To achieve this, humanitarian organizations look for a balance between speed and cost efficiency throughout the supply chain to meet their demand (Tomasini & Wassenhove, 2009).

Along the way of the humanitarian logistical process, it is crucial to provide relevant and appropriate supplies in a good condition and in the right quantity and time; to manage and prioritize the use of restricted and shared transportation; to store, prepare, and transfer goods; and to move people in unforeseen conditions (Thomas & Kopczak, 2005). Nonetheless, as will be detailed later, many of these operations are hindered by logistical problems. Natural and man-made disasters can vary in type and level of intensity, being that each one requires a different response and, regardless of their nature, present distinct phases. For instance, in the first few days, the priority is the access to the disaster local, and to witness and document the extent of the damages and work out future

solutions. After this, organizations seek to implement their programs, distribute responsibilities and the cost-effectiveness gains greater importance. In the final phase, the strategy involves transferring operations to local actors who remain in the disaster location (Tomasini & Wassenhove, 2009).

Between the three different stages (ramp-up, sustain, and ramp-down), it is noticeable the change in importance from speed to cost reduction. To make it clearer, the authors Tomasini & Wassenhove (2009), explain that in the first phase, where uncertain and high emergency situations take place, all processes must focus on being quick regardless of costs. Thus, with speed as the primary motivator, lead time reduction becomes a critical factor to consider in humanitarian logistics. Any reduction in supply chain lead time can benefit beneficiaries significantly, as it results in a larger return on donations. On the other hand, at the later moments of a disaster, after the operations and responsibilities have been settled, cost-efficiency driver emerges as a priority. Then, once beneficiary needs are defined (demand side) and donations start to being received (supply), the supply chain starts to resemble a traditional business supply chain. Moreover, disaster response is not the only situation where cost and speed must be balanced. It is also relevant in disaster preparedness, where the supply chain approach is also more similar to the commercial context. Humanitarian organizations are working consciously to develop methods and products that will better prepare them to meet both cost and time goals (Tomasini & Wassenhove, 2009).

While there are crucial differences between the two areas, there are also similarities, namely the share of a common goal, i.e., they both intend to provide the right items to the right people at the right time. To achieve this, both type of organizations needs to rely on basic concepts such as, planning and preparedness, design, procurement, transportation, inventory, warehousing, distribution, and recipient satisfaction. Another similarity with the business sector lies in the fact that, humanitarian organizations are increasingly viewing logistics as a crucial area for operational performance, since, even if it is one of important function that demands great funding, this is the key aspect where the success or failure of the humanitarian operation is decided (Wassenhove, 2006).

Among the most notorious differences, they are mostly related to the intimately related characteristics of humanitarian logistics. For instance, Kovács & Spens (2007) highlight that, while business logistics normally deals with predetermined groups of suppliers, production centres, having a relatively stable predictable demand; all these factors are unknown to humanitarian logistics. Other considerations include the end user,

the infrastructure and logistical differences, and military and government engagement (Oloruntoba & Gray, 2006). Since the humanitarian supply chains range from donors and suppliers to beneficiaries; as a result, the final customer is defined differently. This means that, in a traditional business supply chain, the end user is referred to as the buyer if the individuals who buys the product is also the individual who actually uses the product, whereas in humanitarian supply chains, the beneficiary is referred to as the end user. In this sense, contributors are regarded as clients because humanitarian groups rely on them to carry out their operations (Oloruntoba & Gray, 2006). However, the issue of the definition of the customer is yet considered a theme of debate and confusion. This is the case, as some authors also defend that the individuals or organizations that receive the supplies, which means, the beneficiaries, can also be regarded as the final customers (Rushton et al., 2014). This idea is also confirmed by Balcik & Beamon (2008), as they state that the aid beneficiaries are the customers in the relief chain. However, it is worth noting that since funders play such a significant role in humanitarian relief that the vast majority of NGOs currently see donors, rather than aid recipients, as clients. From this perspective, NGOs operate as part of a service chain, offering the service from donors that is then redirected to beneficiaries. Moreover, Balcik & Beamon (2008); Thomas & Kopczak (2005); Vitoriano et al. (2011) and Wassenhove (2006), specify the contrasting factors that distinguish commercial supply chains and humanitarian relief chains, in what regards strategic goals, customer and demand characteristics, and environmental factors. Given that it is typically carried out in instances of blatant urgency and that the entire procedure cannot be delayed, humanitarian logistics have a time of zero reaction, or almost nil. Moreover, it is usually impossible for anyone to forecast when the scenario will develop, which makes managing it much more challenging. Other factors include irregular and unpredictable demand in what concerns time, geographic location, type, size, and phase of the disaster timeline; lack of resources in terms of human capital, supplies, technology, transportation and capital funding and, short periods for procurement and arrangement of large amounts of assorted products and services to response or to arrange supplies, and finally a poor infrastructure and security concerns (Balcik & Beamon, 2008; Thomas & Kopczak, 2005; Vitoriano et al., 2011; Wassenhove, 2006).

In addition, the humanitarian sector, also differ from the traditional one due to unclear and ambiguous objectives, limited human resources, lack of capital resources, high levels of uncertainty and highly politized environment and performance measures

(Tomasini & Wassenhove, 2009).

Starting by the objectives, Tomasini & Wassenhove (2009) highlight the impasse of accessing the level of engagement and commitment of the several actors and intermediaries that usually operate in a spontaneous and uncoordinated manner. The fact that the supply network typology of humanitarian logistics differs from the business logistics one, due to the larger number of entities involved and the lack of clear or acknowledged connections between them, also reflects the lack of consistency between the actors (Kovács & Spens, 2007). From another point of view and as already mentioned, Balcik & Beamon (2008), point out that since humanitarian organizations strive to achieve its social purpose and their mission, they are not concerned with making profit. The authors also consider that that the objectives of commercial logistics are cost reduction, capital reduction and service improvement while the goals of humanitarian logistics consist of saving lives and reduce human suffering and vulnerability, given the financial constraints. Balcik & Beamon (2008), also add that the main focus of commercial logistics is the maximization of profit or minimization of costs, while the fundamental focus in humanitarian logistics is to improve performance in terms of the time and capacity required to respond to the needs of the affected population.

In what concerns human resources and capital resources, the humanitarian aid sector is a field used to work within settings where there are voluntary and irregular contributions of finance and labour. Thus, recurrently, high employees' turnover and a limited pool of competent and easily deployable individuals have resulted in a shortage of human resources (Tomasini & Wassenhove, 2009).

In addition, while the capital resources for-profit organizations consist of revenues generated through the sale of products and services to consumers; the sources for non-profit organizations mostly come from government foundations, charitable donations from individuals or groups, and in-kind donations (food and clothing, for example) (Balcik & Beamon, 2008). What is more, capital resources are exposed to fluctuating and variated donations, limiting the liquidity in the field (Tomasini & Wassenhove, 2009).

Regarding the high levels of uncertainty and the politicized environment, the authors Tomasini & Wassenhove (2009) emphasize that the uncertainty of the unavoidable nature of the circumstances has a direct effect on the quality of the perception of supply and demand; whereas all this takes place in a context where the political goals of the various parties engaged, such as donors, governments, the military, and humanitarian agencies, are all at stake.

With respect to performance measures, Balcik & Beamon (2008), sustain that in humanitarian logistics there are no effective measures of performance, so the different actors in the process are not directed towards a line of effectiveness and efficiency as they could be, thus revealing flaws in the logistical processes. In contrast, Balcik & Beamon (2008) also refer that, in the business sector, the performance indicators are much more direct, with relatively clearer and more accessible financial measures. Profits are easy to measure and are a good test of what the market needs for its satisfaction and for the ability of organizations to operate efficiently. However, the challenges identified for performance measurement in the non-profit sector include the intangibility of the services offered, the incommensurability of the missions, the unknown outcomes and the variety, interests, and patterns of stakeholders. The great urgency and pace of humanitarian activities make it difficult to keep complete track, control, and accountability of humanitarian initiatives and their consequences, and, in consequence, time for analysis and recording is often limited (Balcik & Beamon, 2008).

Thus, humanitarian and conventional supply chains have quite different objectives and performance measures. In contrast to humanitarian supply networks, which have no profit targets and rely mainly on volunteers and donors, conventional supply chains are overseen by stakeholders who have interests in their profitability. Therefore, due to a lack of information and communication technologies, as well as experienced workers, humanitarian supply chain management performance reporting becomes increasingly challenging when compared to the commercial sector (Thomas, 2008).

In this sense, it is important to state that humanitarian logistics is surely constrained with hard challenges that prevent it from a smooth and stable flow of processes through its supply chain due to all the fluctuating factors that may emerge. Thus, among the similarities and differences between humanitarian logistics and business logistics, there is room for cross learning possibilities among both disciplines. For instance, there is a world of opportunities for the development of business logistics, since it is possible to learn how to operate under unpredictable environments. Besides this, businesses can benefit from the strengths of humanitarian logistics to improve their performance and gain a competitive advantage, as they are incredibly nimble, adaptable, and capable of quickly establishing and modifying supply networks in challenging conditions. Nonetheless, companies are in greater need of the same capabilities as humanitarian logistics due to the increasing needs of changing demands and risks of operating with global supply chains, as well as the growing essential role of logistics in

generating profits under these conditions (Wassenhove, 2006).

On the other way around, despite the differences in situations and circumstances, researchers advanced that humanitarian logistics could also benefit from commercial logistics, due to the extant shared basic factors that are not so different between the two areas (Kovács & Spens, 2007). For instance, Wassenhove (2006), argues that business logistics is already a developed discipline from which, there are useful concepts and tools that can be potentially transposed or adapted to humanitarian supply chains. In addition, due to all the obstacles that humanitarian logistics have to face, characteristics as adaptability and agility have to be intrinsic to their normal way of functioning. Thus, as humanitarians professionals can take a lot of lessons from the business sector in terms of tools and techniques, such as inventory control or warehousing; the business sector can equally learn from the humanitarian sector in what concerns agility and adaptability of response to unpredictable situations. Regardless of the differences in context between the commercial and humanitarian sector, supply chain management is at the ‘heart’ of any logistical operation (Wassenhove, 2006).

2.5. Humanitarian organizations and their missions

According to Kovacs & Spens (2012b), a humanitarian organization (HO) is defined to be an entity that oversees the distribution of aid to beneficiaries, while following humanitarian ideals and principles. Non-governmental and relief organizations are considered humanitarian organizations, independently of their principles or organizational structures. Furthermore, humanitarian organizations have the ability to deliver relief either directly or through partners. Moreover, in accordance with Wassenhove (2006), humanitarian organizations serve as a means to efficiently provide help to vulnerable people that need assistance, regardless of the circumstances. Besides this, this kind of entities are led by a set of principles which set them apart from private sector counterparts. Therefore, they are guided by fundamentals of humanity, neutrality, and impartiality. Hence, humanitarian organizations have the duty to assist anyone in need wherever they are found; they will not use their intervention to influence the result of a conflict; and they will not favour one set of beneficiaries over another. Furthermore, neutrality means helping without affiliation with either party, or without preferences. Thus, organizations choose not to act if there are political issues that pose a risk to their operations. Impartiality is defined by providing assistance without discrimination and giving priority to emergencies with the greatest need. However, evidently, all these

principles vary and have different interpretations by the different aid teams, depending very much on the sector of activity. Thus, humanitarian aid faces the challenge of finding neutral ways to carry out its mandate, without compromising its principles or creating a negative impact at the affected area. It is also vital to foresee and mitigate the effects of assistance manipulation, as well as to avoid conflicts, by maintaining continual communication among all parties involved (Tomasini & Wassenhove, 2009). In other words, the purpose of humanitarian organizations is to deliver a service to humanity without neglecting their principles of impartiality and neutrality. HOs' overarching goals are to respond to disasters, protect human rights, provide relief services, and promote the universal need for personal and collective safety, security, respect, and dignity, disregarding any intention of benefiting with any profit (Shafiq & Soratana, 2019a).

According to Tomasini & Wassenhove (2009), in each mission in a disaster relief context, humanitarian organizations play a key role and are allowed to intervene in conflict or disaster zones, due to all the governing principles of humanity, neutrality and impartiality, regarding political and/or economic issues that guide them, which facilitates their free action. However, it still represents a challenge in the relationship with the other parties involved, such as the military, governments, suppliers, other partners, and beneficiaries. Although the main objective of humanitarian organizations is to help people and alleviate their suffering, what leads each stakeholder to become involved in the response can vary depending on their interests, missions, logistical capacities, differences at a political, cultural, or organizational level (Balcik et al., 2010; Wassenhove, 2006). However, some of the most frequent problems consist of obstruction to the access, manipulation of aid, unfair economic relations, and lack of viable structures. According to Fink & Redaelli (2011), organizations involved in emergency operations, often denounce inequalities in allocation of aid and resources, with cases receiving little or no international help and others who receive too much aid. Thus, for instance, the military has a key role in international aid, as they are endowed with a strong ability to coordinate the human flow of aid and historically have cooperated at a horizontal level with organizations.

Therefore, humanitarian operations have long received criticism due to the lack of coordination and collaboration between actors during disaster relief operations (Kovács & Spens, 2007). Thus, due to the rising difficulties of disasters, Wassenhove (2006), advances that better cooperation among humanitarian agencies is essential.

2.5.1. Food Bank organizations: their missions, challenges, and logistics

Food banks are an important actor within the food aid sector as its final goal consists in distributing donated and purchased food directly or through intermediaries to food insecure populations. The concept ‘food bank’ can stand for two types of meanings: on one hand, can refer to a big redistributor of saved food to smaller organizations that supply prepared or uncooked food to food insecure communities, or either refer to a service that directly provides food products to beneficiaries (Bazerghi et al., 2016). Moreover, food banks not only constitute a “safety net” for the surplus food present in the supply chain food system, as it also serves as way of reaching out the vulnerable individuals in need (Capodistrias et al., 2021).

Food insecurity is a condition in which the availability of nutritionally adequate and safe foods, as well as the ability to acquire them is limited or uncertain. In other words, there is not access to an adequate diet due to the lack of resources. Normally, this condition affects the individuals and households who are in a disadvantageous situation in socioeconomic terms, which can have different levels of severity. Unfortunately, this is a status that increasingly more people are experiencing (Bazerghi et al., 2016). Indeed, if it gets to an extreme, it can result in hunger which refers to a chronic painful physical condition due to the absence of food (Food and Agriculture Organization of the United Nations, Unknown). According to statistics of the United Nations, “2.37 billion people are without food or unable to eat a healthy balanced diet on a regular basis”. Furthermore, the advent of the COVID-19 pandemic resulted in a rise of 70 to 161 million people facing hunger from 2019 to 2020, contributing to a global total of 720 to 811 million undernourished people (United Nations, 2020).

Thus, with the intent of reducing food insecurity level and hunger, food banks’ purpose is to act in order to alleviate the vulnerability of people in need by counteracting food waste and asking for solidarity of people, since these non-profit organizations are predominantly dependent from donations and food sharing (Euro Food Bank, Unknown). Furthermore, to tackle the clients’ needs in the best way, food banks have to face several challenges in the way. In accordance with the authors Bazerghi et al. (2016), three key motives justify the difficulties faced by food banks in solving clients’ needs: the number of individuals who need food assistance is constantly increasing; donations are not increasing at the same proportion as demand or they are not appropriate; food bank manpower lack the appropriate skills or are not well trained in areas as nutrition, so that

they are able to provide guidance and recommendations to beneficiaries (Bazerghi et al., 2016). Indeed, food banks face a hurdle in obtaining nutritional food in adequate quantities. In most of the cases, there is a discrepancy between the need of food and the food supplied. For instance, food bank organizations are most of the times confronted with problems with limited capacity to provide a wide and varied range of fresh food products due to the inconsistent and inappropriate quantities of donated food or funding to purchase adequate supplies, due to the higher costs of obtaining healthier food products and their limited storage space and adequate refrigeration. These conditions restrict food banks to meet clients' nutritional demands, which is especially problematic for those with special needs or diets (Bazerghi et al., 2016).

Parallely to managing operations within a humanitarian context, food banks also face similar challenges, such as, a constantly increasing demand for services; uncertainty from demand and supply side; the variability of volunteers' support; the lack of purchasing power of the final consumers; intensified competition between food banks organizations for private fundings, and a huge lack of skilled, professionals and experienced personnel. Food banks are resource-constrained organizations that operate in complex supply chains due to the variety of upstream and downstream partners with whom they need to collaborate. Hence, to keep up with the uncertainty and to be able to deliver their final objective, i.e., distribute food to needy communities, food banks must make the most use of their limited resources so that they are able to coordinate with their partners. Only in this way, donations can potentially be paired with demand in a timely manner (Ataseven et al., 2020).

It is important to notice that the supply network of food banks is rather complex, as they are dependent from support in the form of monetary terms or food from private or public organizations, supermarkets, churches, governments, corporations, individuals, and federal and state partnerships. Fundraising efforts are vital for food banks, and they differ from one to the next, depending on the amount of donated food. These funds are frequently required by food banks for them to purchase a particular amount of the food to be later distributed. Besides this, on the demand side, entities such as local food pantries, soup vans, community kitchens, shelters and volunteers are the ones responsible for helping to manage the distribution network of food. Moreover, as food banks operations highly depend on volunteer work, it also constitutes a burden to which these organizations have to deal with, as this kind of support turns to be very variable (Ataseven et al., 2020; Bazerghi et al., 2016).

When comparing companies within the food industry, the food banking sector has its own particularities. For instance, food banks, like other humanitarian organizations and unlike commercial firms, use non-profit performance indicators that are based on the organization's social aim. Thus, as an example, the amount of food supplied to needy communities is used to assess the performance of food banks, which dramatically differs from the performance measures employed by commercial organizations. In addition to this, for food banks, food loss as a result of not being able to match supply and demand in a timely manner is a more serious issue, as the purpose of food bank organizations is to make this coordination possible with the least resources as possible. Other differences that set them apart from commercial settings is the uncertainty in food and monetary supply, the greater diversified set of agencies that food banks need to collaborate with, the constrained resources and the low purchasing power of the end customer (Ataseven et al., 2020).

When operating resources are appropriate, perishable food goods are available, and client needs are identified and handled, food banks have the potential to improve food security outcomes. However, the authors Bazerghi et al. (2016) have found that, even if food banks play a crucial role in providing reasonable and quick solution to improve food security, they are most of times limited in their ability to reduce food insecurity outcomes, due to the insufficient provision of nutrient-dense foods, particularly dairy, vegetables, and fruit.

In developed countries, food aid services that include food banks, community kitchens and soup vans are the entities in charge of meeting community needs in what concerns food insecurity issues. Typically, these services are only intended to be a short-term solution for those individuals that are socioeconomic disadvantaged. However, as food banks are turning to be a major entity of food aid assistance in developed countries, there is a huge opportunity and need for more research to determine the significance of these programs in combating food insecurity. Food banks are a valuable source of food assistance for populations who are food insecure, according to the research that is currently available. However, there are some concerns about their ability to prevent or alleviate food insecurity and hunger due to the limited selection, poor nutritional quality, and quantity of donated food, which occurs in the majority of cases. Hence, as food banks have long been used as a safety and backup 'tool' only for short-term crisis, they are now being significantly frequently used as a method for those individuals experiencing long term food deprivation. However, according to the authors Bazerghi et al. (2016), many

people still experience food insecurity, as food banks are unable to meet the nutritional needs of those in need, nor can they reduce either short-term or long-term food insecurity. Given the data in the literature linking food insecurity to poor health outcomes, this fact is worrying, and it is especially troubling for recipients who largely rely on food banks for their necessities (Bazerghi et al., 2016).

Hence, even if food banks may not be able to meet all client's needs in totality, they can at least help to mitigate some effects of food insecurity in the societies they operate. Therefore, food banks that are able to provide adequate foods in a way that the beneficiaries feel dignified, are the most effective at meeting client requirements and improving food security. Appropriate food products imply to be those that are believed to be safe, nutritious, and accommodating to unique dietary requirements. Hence, to minimize food insecurity and due to all these constraints and complexities, a more streamlined, efficient, and direct way to formally procuring and distributing food is encouraged, in which the limited resources are used in the best way possible. As well as this, improving procedures to support the availability of healthier options by educating staff and donors about it is also necessary (Bazerghi et al., 2016).

2.6. Supply chain management under disruptive events: the case of COVID-19

Supply chain risks can be divided into operational and disruption risks. Operational risks deal with day-to-day disruptions in supply chain operations, such as for instance, lead-time and demand changes. On the other hand, disruption risks are concerned with high impact events that happen with a low frequency as for example, natural and man-made disasters, strikes, and wars. Once factories, suppliers, distribution centres, and transportation linkages become temporarily unavailable, such risks have a very powerful and rapid influence on the supply chain network design structure. Conversely, the consequent material shortages and delivery delays, cascade downstream the supply chain, generating a ripple effect and a decline in revenue, service level, and productivity (Blessley & Mudambi, 2022; Ivanov, 2020).

One particular case of supply chain disruption is the emergence of pandemic outbreaks as the most recent one, COVID-19 pandemic. This type of disruption can be characterized by three aspects: the existence of long-term disruption and its unpredictable scale, the ripple effect which is denominated as the simultaneous propagation in the population, that starts small but escalate quickly to many geographic areas, and

simultaneous disruption in supply, demand, and logistics infrastructure (Blessley & Mudambi, 2022; Ivanov, 2020; Raj et al., 2022). A supply chain disruption can be defined as an occurrence that occurs unexpectedly and has a significant influence on society, disrupting routine operations and resulting in losses of life; on economies; and on the environment. The normal function of global supply chains within companies and economies is exposed to hazards that go beyond national boundaries (Pujawan & Bah, 2022). COVID-19's global expansion has had a huge impact on supply chains at both the local and global levels, putting pressure on most countries' key infrastructures. Not only is the worldwide movement of products harmed, but so is local production and demand. These issues have led to huge disruptions throughout the supply chain, by affecting every actor of the supply network due to all the imposed restriction measures and procedures (Pujawan & Bah, 2022). As suggested by Blessley & Mudambi (2022), the world faced a macro supply and demand shock, affecting all industries and global markets. When faced with such a turbulent supply chain, businesses are presented with changes in the business environment that goes beyond their control.

In consequence, with the emergence of COVID-19 in late 2019 in Wuhan, China, nearly all countries have been affected and more than 90 million people have been infected. Within only three months, the coronavirus has been declared as a global pandemic by World Health Organization, in March 2020. Due to the severe health consequences of the virus, the pandemic has resulted in around 2 million deaths by January 2021, affecting economy and social life (Hohenstein, 2022; Kovács & Sigala, 2021; Thompson & Anderson, 2021). Moreover, more than half of the world's population has been subjected to a lockdown with very restrictive measures, that have never been used on such a broad scale in history. In order to handle the health, economic, and social concerns the epidemic has brought about, governments around the world were left in a position of acute uncertainty and were forced to make difficult trade-offs. Beyond the human tragedy and health effects of the coronavirus, it is now widely accepted that the epidemic caused the worst economic crisis since the conclusion of World War II. In fact, all economic sectors have suffered due to the breakdown of global supply chains, decreased demand for imported goods and services, a decline in foreign travel, a decline in business travel, and, most frequently, a confluence of these issues (Dubey et al., 2021; OECD, 2020; Pujawan & Bah, 2022).

Hence, in comparison with other crises, such as the 2008-2009 financial crisis, the similarities are limited, due to the COVID-19 issue's multifaceted character and

unparalleled scope. COVID-19 has proved to be one-of-a-kind crisis in terms of generating both a supply and demand side shock, as well as its influence on all sectors and areas of the world. COVID-19 has created a high level of uncertainty regarding both supply and demand, provoking disruptions along global supply chains. Furthermore, the level of uncertainty is likewise significantly higher, as governments were forced to choose between controlling the recovery of the economy and reducing the impact of a second wave of the virus. The crisis's long-term effects on human capital, productivity, and behaviour are significant in addition to the immediate health crisis and economic shocks (OECD, 2020).

Epidemic and pandemic outbreaks have ravaged several countries at the same time throughout history, interrupted global trade, thrown economies into disarray, caused refugee crises, dictated the outcomes of wars, and even decimated whole populations simultaneously. Nowadays, leading disease experts argue that the world is currently living in an age of pandemics and epidemics, in which they emerge mainly due to human activities ranging from the industrial revolution and urbanization to our general lifestyles. Human exposure to zoonotic diseases that are naturally transmissible between animals and humans has increased. Thus, the doubt is not if future pandemics will happen, but rather when will happen. Therefore, as demonstrated by the COVID-19 pandemic, it cannot longer be overlooked the link between the global supply chains, which constitute the “veins of an economy”, and natural and man-made calamities, including diseases and pandemics, environmental degradation, and deforestation (A. Jabbour et al., 2020; Kovács & Sigala, 2021; Thompson & Anderson, 2021). Moreover, pandemics and epidemics are not the same as other natural disasters. Indeed, their scope, rate of change, and impact, are considerably more complex. Furthermore, information requirements and types, information gaps, the complexity and urgency of decision-making circumstances are all elements that lead to uncertainty, prolonging the process and injuring even more people. In consequence, COVID-19 has revealed major vulnerabilities in the general supply chain, as well as in the humanitarian response supply chain. Thus, academics and researchers in humanitarian operations are now turning their attention towards this topic, highlighting the difficulties noticed with these types of disruptions, so that lessons could be learned (Thompson & Anderson, 2021). In addition, Gupta et al. (2021), Raj et al. (2022) and Ivanov (2020), also suggest that COVID-19 is a one-of-a-kind type of disaster and supply chain disruption, in which is noticed its high severity and intensity that not only tremendously affected human lives, but also global supply chains in a way never

seen, when compared to other past outbreaks. Moreover, Pujawan & Bah (2022) and Raassens et al. (2021) have named COVID-19 pandemic as a human tragedy and a global health concern, with an abrupt impact on the global economy. Several characteristics of the COVID-19 pandemic has turned it to an event difficult to handle, where its uncertainty intimately related, its ultimate severity and the fear of the unknown made real-time management decisions difficult to handle. Contrary to some natural or man-made disasters, the pandemic was not a discreet event, occurring at a certain moment in time or even in a short period of time. In addition, in contrast to a geographically localized natural or man-made disaster event, the pandemic is not limited to a specific place. Thus, manufacturing, distribution centers, logistics, and markets can all become immobilized within overlapping time periods, if different actors of the supply chain are affected sequentially or concurrently. Moreover, the COVID pandemic shattered both supply and demand at the same time, turning their dynamics quite complex (Anderson et al., 2021). Certain established trends, like digitalisation, have accelerated as a result of the COVID-19 problem (Kovács & Sigala, 2021; OECD, 2020). In addition, Pujawan & Bah (2022), also suggest that despite the negative consequences brought by the pandemic, it has also spawned and emphasized the significance of digitization across different sectors and has greatly encouraged the reduction of COVID-19 spread, as teleworking and digitally organized logistics have helped to lessen pandemic's harmful effects (OECD, 2020).

The COVID-19 crisis is not uncommon in its brevity. Due to its biological hazard and unparalleled worldwide reach, the COVID-19 is categorized as a “black swan” or low probability high impact event. The duration of the crisis is unknown, governments play a significant role, and businesses lack a clear protocol for dealing with the COVID-19 situation (Raassens et al., 2021). Thus, it is in this sense that, as a result of the COVID-19 pandemic, all firms were obliged to rethink their supply chain strategies and alter their business models in order to deal with the business disruption and supply chain problems (Gupta et al., 2021). As a way of example, prior to COVID-19 period, supply chain managers concentrated their focus on just-in-time inventory management, which helps to cut costs and improve efficiency. However, in the aftermath of COVID-19 pandemic, it has become evident that this approach fails to prepare global supply networks to deal with major shocks like the COVID-19 pandemic (Raj et al., 2022). Moreover, it has also increased the importance of risk management and mitigation strategies. Thus, to avoid unforeseen reactions to future natural catastrophes and to effectively address unanticipated interruptions, organizations must examine their supply chain strategy,

supply chain architecture, and supply chain dependencies. By the same token, supply chain research in the pandemic context is yet giving its first steps, as only few studies have been conducted, and the extant ones, tend to focus on theoretical attempts to better explain the COVID-19 problematic or suggest future study directions based on literature review evaluation. However, the supply chain issues that corporations are currently facing as a result of COVID-19, as well as mitigation methods, are mostly absent from the current global supply chain discourse. As well as this, epidemic consequences have been extensively investigated in humanitarian logistics literature; nevertheless, there is a study deficit in understanding pandemic impacts in supply chains (Queiroz et al., 2020). Hence, these difficulties have also prompted supply chain managers to reconsider their supply chain methods to minimize future disruptions and to capture lessons from COVID's disturbances to construct more resilient supply networks (A. Jabbour et al., 2020; Raj et al., 2022). Companies that are under pressure from COVID-19 should prioritize their recovery and learning capabilities, where learning refers to the ability to enhance activities based on the consequences of a disturbance, whereas recovering refers to the ability to restore activities to where they were before the supply chain disruption (A. Jabbour et al., 2020).

According to an analysis done by some authors, Butt (2021) and Pujawan & Bah (2022), they question if the extant theories, principles, and strategies to mitigate supply chain disruption before COVID-19 are still valuable and valid to current disruptions. After a thorough analysis of extant literature after COVID-19, the authors came to conclude that there seems to be a consensus and consistency with previous publications. For instance, from a supply side in times before COVID-19, mitigation strategies such as having redundancies and flexible conditions with supply sources, or in other words, supply diversification, having backup suppliers were suggested (Butt, 2021; Pujawan & Bah, 2022). And in alignment with the extant literature addressing COVID-19 disruptions, it is also encouraged to possess supply backups and flexibility. Yet, it is emphasized the stronger need to localise the supply base (Pujawan & Bah, 2022). Regarding inventory buffering, there is a stronger emphasis in what concerns having buffer inventory, or in other words, stockpile inventory, prepositioned inventory, redundant and strategic stock to prevent and mitigate supply chain disruptions (Butt, 2021; Pujawan & Bah, 2022). Furthermore, Butt (2021), also suggests that organizations must work on extensive plans for expected and worst-case scenarios to guarantee that supply matches real demand. Finally, companies can reduce supply chain disruptions by

forming a cross-functional team, which is accountable for coordinating supply chain risks and plans. In addition to this, the literature also suggests that supply chain flexibility to battle all kinds of supply chain disruptions, including COVID-19 one, can be achieved with postponement techniques, alternative modes of transportation, and transportation route flexibility. After COVID-19, a few aspects are getting a lot more attention, such as digitalization and information collection, safety, localisation, the need to review the meaning of efficiency, processing, and visibility. While these areas have long been recognized, COVID-19 has increased the demand on supply chains to digitalize and employ more accurate data processing. As well as that, digitalisation of production and logistics has become increasingly crucial as the desire to ensure employee safety, along the supply chain has grown (Pujawan & Bah, 2022). Moreover, Queiroz et al. (2020), consider that key aspects like adaptation, recovery, preparedness, sustainability, and as already mentioned digitalization, are crucial to be incorporated into the supply chain design (Queiroz et al., 2020; Raj et al., 2022).

From another point of view and in response to the aftermath of the novel coronavirus pandemic COVID-19, supply networks have quickly adjusted to the changing scenario in order to respond to these changes. Some of the strategies followed by businesses in a general way, and as mentioned in several literature articles, three concepts were essential to the early phases of the pandemic, namely **resilience**, **frugal innovation**, and **dynamic capabilities**. The three conceptions will be better explained now.

- **RESILIENCE**

Starting with the concept of resilience, it can be defined as the ability of a company to survive, adapt, and develop in the face of adversity. Focusing on improving the adaptability of global supply chains, collaborating with stakeholders, and leveraging information technology to ensure continuity; supply chain resilience is about balancing exposure to risk, while not overly eroding profits, regardless of small scale or catastrophic disruption (Blessley & Mudambi, 2022; Butt, 2021). In other words, supply chain resilience is a proactive and holistic strategy to build the ability to anticipate and adjust to unanticipated events. Thus, resilience is improved when uncertainty and vulnerabilities are reduced (Raassens et al., 2021).

Supply chain resilience addresses the supply chain's ability to react to unforeseen occurrences, respond and resist to disturbances, and recover from them while maintaining

operational continuity. Thus, a resilient supply network is able to adapt to unforeseen events and return to its original shape after it, by correcting certain disturbances or instead, reshaping into another configuration. Following a disruption event, it may also be desirable for the supply chain to learn from the disruption and dynamically adapt to a new configuration rather than returning to its old "shape" (Herold et al., 2021; Raassens et al., 2021). Since the planned post-crisis condition differs from the original, pre-crisis state, adaptability is essential. As a result, supply chain resilience is more than just a reactive capability. Indeed, supply chain resilience allows supply chain actors to not only withstand but actively profit from disruptions by relocating to a new and more desirable state, after being disrupted (Raassens et al., 2021). Therefore, it can be concluded that resilience can be defined by two critical capacities, namely, the capacity for resistance and the recovery capacity (Thompson & Anderson, 2021).

According to past research on the topic of supply chain resilience, it generally focuses on the resilience that is built from unexpected shortages or in supply, or rather increases in demand. As well as that, past theory and research also show that experience with supply interruption can help businesses respond better to future supply disruptions, however on the demand side, disruption lessons can only occasionally be transferred. Nonetheless, when there are significant effect increases in both supply and demand, theory and previous research provide only a few ideas on how to enable resilience. Therefore, understanding supply chain resilience to disruption has academic and practical importance, given the possibility of future high-impact disruptions (Anderson et al., 2021; Blessley & Mudambi, 2022). In terms of its implications on global supply networks, the COVID-19 pandemic in 2020, was undoubtedly the most disruptive event in the last decades, due to the pandemic's rapid fluctuation from both supply and demand-side (Anderson et al., 2021). Thus, it is not by chance that the most frequent issue for investigating the implications of COVID-19 from a logistics and supply chain viewpoint is supply chain resilience. Indeed, as a result of supply chain survivability concerns, academia and researchers have advocated for more studies into improving supply chain resilience on a global and local scale. The final aim of these studies regardless of the different definitions of supply chain resilience that exists, is to work on the capabilities required to have more operational flexibility in the supply chain network (Herold et al., 2021; Thompson & Anderson, 2021). As demonstrated by the pandemic disruptive event, the global supply chain planning appears to have only partially worked as it in some supply chains, demand surged substantially and supply was unable to meet it, or demand

dropped abruptly, resulting in production halts, bankruptcies, and government intervention. As a result, the COVID-19 crisis highlighted the importance of flexible reconfiguration of logistical infrastructure and resources in order to maintain flows and, as a result, keep supply chains working normally (Herold et al., 2021). Resilience is a continual process, but it must be planned and executed in advance of the disruptive occurrence (Thompson & Anderson, 2021). The new coronavirus has brought a quickly changing environment with it, and businesses must adapt, respond, and proactively reduce disruptions by dynamically synergizing, integrating, and rebuilding their competencies, resources, and overall capabilities (Raj et al., 2022).

- INNOVATION

In what concerns innovation, the concept can be defined as a form of co-creation or collaborative recombination of techniques that produce creative solutions for new or existing challenges. Moreover, innovation can play a key role in the co-created capability of predicting disruption, by responding quickly, and in the agility of recovering and learning (Blessley & Mudambi, 2022).

With the upcoming crisis that resulted from COVID-19, it surged an opportunity to innovate, as for instance, worldwide businesses were committed to work on low-cost global supply chains to assist resource-constrained economies, in combating the exceptional challenges given by the pandemic crisis caused by COVID-19. As an example of this, a lot of firms have radically changed their core business process into producing other type of urgent items, such face masks, hand sanitizers, personal protective equipment. These practical examples define frugal innovation, which entails doing more with less for a larger number of people, as well as being creative, innovative, and resourceful in the face of resources limitations. As well as this, frugal innovation stands for a distinct way of thinking and behaving in response to obstacles by effectively detecting opportunities in the most adverse conditions and improvising solutions resourcefully, in the simplest feasible method. In other words, frugal innovation can also be seen of as a means to grow with less and save costs, which will improve an organization's environmental and economic performance (Dubey et al., 2021; Harris et al., 2020). Since resources are always limited within the field of charitable food supply chain networks, the concept of frugal innovation is especially pertinent to study about (Blessley & Mudambi, 2022).

As it is described by Harris et al. (2020), in response to the COVID-19 pandemic,

necessity has been the mother of innovation. The innovative solutions most of the time happen in a time and resource-constrained environment, turning the situation difficult to assess if the solutions created are suitable for the pressing challenges and situations of the time. Thus, there is much to be learned from times of adversity that may be applied to future events (Dubey et al., 2021; Harris et al., 2020). Moreover, Capodistrias et al. (2021), argue that droughts and pandemics spur innovation, technological advancements, and institutional reforms, and should be regarded essential lessons not only for the COVID-19 outbreak, but also for climate policy and long-term sustainability.

Therefore, regardless of the numerous hurdles imposed by the COVID-19 crisis, it has increased awareness of sustainability issues among organizations, citizens, and governments, and there is a pressing demand for frugal innovation to build sustainable global supply chains. As a result, it is suggested by researchers that frugal innovation is the most straightforward, acceptable, and suitable response to practically all the major issues posed by COVID-19. Thus, continuous innovation is required to keep supply chains lean, which will ultimately help in improving organizational performance. Organizations must also ensure that business innovation and operational sustainability are working conjointly to support society and prevent any potential negative environmental repercussions (Dubey et al., 2021; Harris et al., 2020).

- DYNAMIC CAPABILITIES

Lastly, regarding dynamic capabilities, the author Hohenstein (2022), argue that the key for firms to strive disruptions events such as pandemics, relies on possessing an ability to rapidly adapt and dynamically change their structural processes. In other words, the ability of an organization to adapt, adjust, and reconfigure its internal and external resources and capabilities, in response to rapidly changing environmental conditions is highlighted by the dynamic capability view (Raj et al., 2022). As such, businesses require specific supply chain risk management competencies to operate successfully in a landscape of fragmented global supply chain networks. Superior logistical capabilities such as resilience, enable businesses to efficiently manage unexpected supply chain risks and, as a result, provide a strategic competitive advantage in the process of delivering end value (Hohenstein, 2022; Raj et al., 2022).

Therefore, these competencies can be explained by the dynamic capabilities view, which is built on the resource-based view. From one side, the resource-based perspective defends that superior logistical resources that are valuable, rare, inimitable, and non-

substitutable, are enough to enable businesses to efficiently manage unexpected supply chain risks and, as a result, provide a strategic competitive advantage in the process of creating end-to-end value. On the other side, since the pandemic has produced environmental changes and due to its dynamic nature, the dynamic capability theory has been evaluated over the resource-based view of the organization, which is more appropriate to static situations rather than the dynamic ones (Raj et al., 2022). Thus, the dynamic capability's view extends the resource view, by focusing on how businesses can generate new skills while leveraging their distinct internal and external strengths. More concretely, this view points out the importance of enterprises reacting and adapting appropriately to dynamic, fast-changing business situations, such as those that arise after a major supply chain disruption. Firms must replenish their capacities and reorganize their resources as soon as possible to gain or retain a competitive edge in the long run and in dynamic conditions (Hohenstein, 2022). Moreover, in a dynamic business environment such as the pandemic one, the dynamic capabilities approach highlights the role of businesses' skills in identifying opportunities and threats, seizing prospective opportunities, managing dangers, and reorganizing resources and capabilities to gain a sustainable competitive edge (Raj et al., 2022).

Consequently, in conclusion, it is known that, when supply chain risks are well-known and expected, they are associated with minor disruptions, and cost efficiency takes precedence. As supply chain redundancy is expensive, there is value in developing supplier flexibility for low-impact disruptions. Moreover, according to Kovács & Sigala (2021), mainstream supply chains which are guided by a focus on reducing costs for usual operations, which avoid holding inventory, and favour lean, JIT, and zero inventory management techniques; perform well in the presence of stable and expected operational environments with predictable demand and long-term supplier relationships. However, this is not the case to unforeseeable events, as they fail to respond to high impact disruptions.

On the other hand, supply chain risks face a high impact disruption when there are unexpected, unpredictable, and potentially long-term in nature risks. Examples of this are natural and man-made disasters, wars, and global pandemics as COVID-19. With the threat of major supply chain disruptions, increasingly improving cost efficiency is no longer the priority. Thus, high-impact events necessitate large-scale investments in supply chain redundancy and resilience, as supply chain disruptions with a high cost and large impact can justify the efforts required to build supply chain resilience. In other words, for

high-impact disruptions, solely possessing resources is not enough, firm dynamic capabilities, resources reconfiguration and innovation strategies are crucial to quickly respond to changing environments (Blessley & Mudambi, 2022). Therefore, many elements of pandemic response supply networks and their related supply chain disruptions are common to disaster response, and thus with humanitarian supply chain response. In this way, a lot can be learned from the field of humanitarian supply chain that can be transferred to the management of supply chain interruptions caused by pandemics (Kovács & Sigala, 2021).

2.6.1. Food Bank organizations and COVID-19

As a last note and regarding food banks, given the unpredictability of supply chain disruptions and the sensitivity of food security issues, the pandemic experience has sparked a lot of interest in figuring out how to make food supply chains more resilient (Anderson, 2021).

As known, individuals who face food insecurity usually resort to the help of food banks, as they provide food that is both affordable and accessible. Even though these entities might also go through difficult times, their supply chains can be unstable and vulnerable to a variety of threats. Natural disasters, extreme weather instability, political turmoil, and health crises all disrupt food bank supply chains, being that pandemic outbreaks create a "perfect storm" of increasing demand and reducing supply. For instance, during COVID-19 pandemic, the traditional food supply chain was totally disrupted from food providers as supermarkets, restaurants, food banks to consumers, as a result of containment measures (Blessley & Mudambi, 2022; Raassens et al., 2021). In other words, COVID-19's expansion has had an unparalleled influence on all food markets (Raassens et al., 2021). In addition, panic buying, and stockpiling resulted in a decline in food bank donations and an increase in concern for vulnerable populations, who could not afford to stockpile. As a result of a high rate of sudden unemployment, the consumer demand for the help of food banks, increased drastically (Capodistrias et al., 2021). Natural calamities and economic downturns are common causes for demand spikes at food banks and are causes which they are used to deal with. However, concerning the outbreak of the pandemic, due to its vast size and distribution issues, this demand rise was unlike any other. Volunteer shortages, the social distancing requirements for volunteers, staff, and beneficiaries, made meeting the required demand extremely challenging. Food banks battle to expand access to food, prevent food waste, and make

the most of the capital and food donations they received. Hence, for food banks to accomplish their mission and serve the food insecure ones, resilience in the food bank supply chain is required (Blessley & Mudambi, 2022).

Unfortunately, the new normal and standards in the supply chains regards volatile, disruptive, and turbulent events. As well as this, a perfect background for learning about these issues in the supply chain is the food supply chain for food banks, as they work under an environment of disorderly turbulence. Thus, many lessons and key takeaways about supply chain resilience can be taken for future disruptive events in the food sector or, in addition, to other types of firms (Blessley & Mudambi, 2022). To this end, the significant impact of the COVID-19 crisis, has revealed the vulnerability of the food supply chain. Hence, this is a once-in-a-lifetime opportunity for researchers to investigate this supply chain network and its crisis management (Raassens et al., 2021). However, it is further important to notice that not all food banks operate in the same way, and thus, supply chain resilience can have different configurations from bank to bank. For instance, food banks in low-food-insecurity areas have considerably different resources and operational processes than those in higher-food-insecurity locals. Also, the demographic and geographic characteristics of the clients serviced by food banks also vary significantly (Blessley & Mudambi, 2022).

Furthermore, according to the study conducted by Capodistrias et al. (2021), who investigated innovation practices that were developed in ten food banks in Europe, during the pandemic situation, it is missing studies regarding how food banks have been able to cope with it, despite the many restrictions imposed by COVID-19 pandemic. This is especially important given the paucity of thorough empirical evidence and comparative studies on the interplay between food waste, food redistribution, and COVID-19. In the end, authors conclude that, despite the social constraints and other challenges posed by the pandemic, food banks were able to redistribute a significantly greater amount of food, due to the introduction of various types of organizational innovations, including new flexible and adaptable strategies, internal structures, and new types of external network relations with other firms or public organizations (Capodistrias et al., 2021).

As a conclusion, and as thoroughly mentioned through this literature review section, a lot can be learned from the study of humanitarian supply chains and its operations, which has an intrinsic link with research on the topic of regular supply chain management. In this way, and by analysing COVID-19 in a humanitarian context, aspects such as the complexity of the challenges faced, the need to coordinate activities among

other actors in the supply chain, identification of the resources needed, the upstream and downstream connections demanded that a global-scale event like a pandemic one requires, can be better comprehended (Thompson & Anderson, 2021).

Managing supply chains within an epidemic and pandemic context requires significant pre-and post-event planning, which should be seen as a continuum, as it allows for contingency planning, flexibility, and supply projection. As soon as the current crisis ends, preparations and improvements learned for the next disrupt event must begin as early as possible. Anticipating unknowns is critical to provide successful responses, and appropriate data is required to do so, which otherwise can compromise the response to vulnerable people. Moreover, working in “silos” prevents data from being shared, which should be ensured based on an infrastructure, so that the diffusion of information is guaranteed along the continuum of the supply chain (Thompson & Anderson, 2021).

Moreover, learning and exploitation refers to the process of gathering as many lessons as possible, about success and failure from both internal and external sources, and then using that knowledge to improve business performance. It is known that companies that encourage the share and application of knowledge from past experiences and support long-term learning to alter their supply chain management procedures, are more resilient and nimbler in their responses to unforeseen disturbances (Blessley & Mudambi, 2022; Hohenstein, 2022).

Consequently, it is now more than ever, the time to act, as economies and societies would need to be prepared to adapt quickly and effectively to future disturbances. The moment has come for supply chains to embrace and put supply chain flexibility, agility, responsiveness, and resilience into practice (Kovács & Sigala, 2021).

3. Research Methodology

This chapter outlines the intended methodology that serves the purpose of this thesis, and it reviews the research purpose, the research approach, design, and strategy that aim to answer the research questions initially established. In addition, the data collection methods will also be further explained.

3.1. Research purpose

The evolution of COVID-19 comes to demonstrate that food bank organizations constitute crucial institutions accountable for solving food waste, hunger and food insecurity issues. As a result, more attention should be given to these social organisms to encourage the creation of more resilient solutions to fulfil present and future demand, as well as a faster recovery from disruptive events in the future.

Therefore, to better understand the issues that humanitarian organizations encounter, the current dissertation aims to explore how COVID-19 has affected the supply chain and logistics procedures of Porto Food Bank Against Hunger (PFBAH) by answering two research questions: *What were the main challenges to Porto Food Bank Against Hunger during the pandemic COVID-19? And how they have affected their logistical processes?; What are the lessons that can be applied for future disruptive events in the organization?.* Hence, in the event of unforeseen events such as the COVID-19 pandemic, the study intends to propose solutions and recommendations for creating a more responsive and agile supply chain process for the organization of Porto Food Bank.

As a result, the study is justified and reasonable because it has management significance and interest in developing an intervention strategy, that may be used to succeed in future disturbing circumstances. Additionally, the author's interest in humanitarian logistics is a compelling reason to research this topic. On a personal level, this thesis presented a fantastic opportunity to gain a greater understanding of a topic that is very important to the author, in terms of future career regarding what concerns the theme of humanitarian logistics and humanitarian supply chain management. Therefore, the purpose of this dissertation is to produce valuable insights on how to develop a more flexible reaction to the negative effects of disruptive occurrences, not only for the specific case of Porto Food Bank Against Hunger but also for other food bank organizations or other surplus food redistribution charity organizations, that might find the study useful to their operational context.

3.2. Research approach, design and strategy

3.2.1. Research approach

Several different research approaches can be used within a study, namely, inductive, deductive, or abductive (Saunders et al., 2016).

Given the scope of this study and the fact that there is a paucity of information on the impact of COVID-19 on humanitarian supply chains and logistics, there is no way to establish a hypothesis based on existing literature. However, as revealed in the literature review part, it was found basis to establish a general comprehension of the issues and conceptual frameworks of this study. Thus, the material collected in the literature review section served as the foundation to construct the methodology part, which was, in turn, used to plan the data collection approach.

Therefore, the present dissertation will follow an inductive approach, as the purpose is not to test a hypothesis based on existing theory, but rather to construct a new theory based on accumulated empirical facts (Patton, 2002; Saunders et al., 2016). Since humanitarian logistics is an undeveloped area and a relatively new issue to investigate, an inductive technique was thought and considered to be the best way to answer the research questions and achieve the study's goals.

3.2.2. Research design

The research design can be thought of as the set of methodologies and procedures used to answer the research questions initially established, and hence, meet the purpose of the thesis (Saunders et al., 2016).

Therefore, the study will follow a qualitative approach and it will be based on a singular sample, the case of Porto Food Bank Against Hunger. The main characteristics of qualitative research are direct data collection through interviews, observations, documents, records of situations, direct quotes from people and their experiences. Thus, qualitative research provides qualitative data, that is based on an interpretive approach that follows a holistic-inductive paradigm of content analysis rather than a positivist and experimental approach, based on statistical data, typical of the quantitative research approach (Patton, 2002; Saunders et al., 2019). Moreover, according to Patton, 2002 and Saunders et al., 2016, when using an inductive technique, a qualitative approach is also more appropriate, as it permits a more in-depth comprehension of the material being studied as this study is not based on numbers, but rather on non-numerical data, such as

opinions, understandings, and codes derived from words.

Additionally, the nature of the research is designed to be an exploratory one, as it answers questions about what were the challenges faced by the organization and how they have mainly affected their logistical processes; and what lessons could be extracted to further develop a mitigation plan to future disruptive events. Moreover, according to Saunders et al., 2016, when a problem's understanding needs to be clarified, the exploratory approach is the most adequate one. Furthermore, it is considered an exploratory study since the research on this issue is restricted as previously said, which indicates that new insights can be discovered. Thus, an exploratory study has the advantage of being flexible and adjustable to change and new insights may arise during the research process (Saunders et al., 2016).

The research will be conducted with a mono method qualitative approach, as it is based on one qualitative data collection technique, namely semi-structured interviews. The time horizon for data collection design will be a cross-sectional one, since the data is supposed to only be collected once, between March 2022 and at the latest, April 2022.

3.2.3. Research strategy

Research strategy essentially concerns the action plan to meet a certain objective, namely answering the research questions. Achieving a feasible level of coherence is key so that the research strategy is in line with the research purpose, approach, and design. Therefore, the conjunction of the research purpose, approach, and design has led to the decision of the best research strategy to pursue, namely, a case study. Indeed, case studies are said to be helpful when the researcher wants detailed descriptions, knowledge, and an in-depth explanation of a certain event. Moreover, a case study can be defined as an in-depth investigation of a topic or event in its natural environment. A case study technique has thus, the potential to yield insights through a rigorous and in-depth investigation into the study of a phenomenon in its real-world setting, resulting in valuable empirical descriptions and theory building (Patton, 2002; Saunders et al., 2016).

Consequently, to develop the present study, it has been adopted an embedded single case study design to explore, as the case to be studied refers to a non-profit organization, namely Porto Food Bank Against Hunger, and the purpose is only to focus on their logistical processes and not the organization as a whole (Saunders et al., 2016).

3.3. Data collection

The present section aims to address the data intended to be collected so that a reasonable answer to the research questions can be provided. Hence, the primary and secondary data collection will be further explained.

3.3.1. Primary data collection: qualitative interviews (semi-structured)

In-depth case studies are the greatest way to understand the interplay between a phenomenon and its context: the emergence of COVID-19 in the context of a food bank organization. Hence, an interview was perceived as the better technique to assess what happened, the significant effects caused, and which implications might affect a future way of action.

The empirical data is intended to be gathered through five semi-structured interviews with five active employees of the organization, so that the process of knowledge generation could be maintained as open as possible. Besides this, all the interviewees deal with logistical issues within their daily activities, by coordinating the sourcing, warehousing, and distribution of the food products (Table 1). As is suggested by Saunders et al., 2016, this type of interview is suitable for situations where the study is an exploratory and qualitative one, to better understand what is happening and get a better comprehension of the topic. In addition, according to Saunders et al., 2016, semi-structured interviews are most of the time referred to as qualitative research interviews. Supply chain managers and managers that deal with logistic issues daily are preferred as the most suitable individuals to interview since they are the professionals that are more familiarized with the theme. As a result, to answer the research questions, the final aim of the conducted interviews was to understand: the way the organization normally works; the impact of COVID-19 on their main processes and how they needed to change; the challenges and difficulties faced that compromised their ability to work efficiently, and the improvement suggestions that can be applied in future disruptive events.

The use of this method is expected to allow to congregate different in-depth opinions, thoughts, experiences, and knowledge from different points of view. Qualitative interviews are extremely beneficial to this type of study since they concede the collection of intriguing thoughts and solutions that directly address the research issue. In the end, it is foreseen to gain access to fresh knowledge that had not yet been researched using secondary sources. Before proceeding with the interviews, information was collected

from the institution through research on the Internet, namely on the organization's website, brochures, reports, interviews with media channels, newspapers, and magazines about the Portuguese and Porto food bank. This information served to obtain prior knowledge of the institution to facilitate communication during the interviews. Moreover, it was taken into consideration the selection of the key topics that should be asked in the interview, so that a reasonable answer to the research questions could be given. In addition, responsibility was taken to ensure that the semi-structured interviews were consistent with the theory, research question, and data intended to be collected so that the quality of findings could be ensured.

The interview script was thought to be constituted of 18 simple open-ended questions with rather thorough responses, which can be consulted in Table 2. According to Patton, 2002, the ultimate goal of gathering answers to open-ended questions is to allow the researcher to record different points of view from individuals, without having to predetermine those points of view through questionnaire category selection. Hence, the final objective of the construction of the interview outline is to create an opportunity to compile clear knowledge of the examined challenges as well as come up with clear responses that might help answer the research questions.

Therefore, the interviews will focus essentially on information about: the professional experience of the interviewees; structure, organization, and way of functioning of the institution; the relationship with other food banks; current logistical processes, what has changed or might change "after" the COVID-19 pandemic; main difficulties faced during the COVID-19 pandemic; perspectives about the future: opinion of the interviewees.

After the decision regarding the type of interviews to conduct and setting all the questions to be asked, a human resource technician of Porto Food Bank was contacted through the LinkedIn platform, to start collecting contacts to interview. To formalize the process, it was elaborated a presentation letter of the master thesis, describing the main goals of the investigation and the data collection methods required, which was sent to a human resources coordinator.

After this, the researcher was invited to visit the institution where it was given an opportunity to directly observe their daily processes as well as their way of functioning and organization. During this visit, it was also possible to conduct three presential interviews with an approximate duration of 35 min to 40 min. Due to constraints of time, the two interviews missing have been conducted online, via Zoom, with the same

approximate duration. Information regarding the elaboration of the interviews can be further consulted in Table 1.

Table 1 – Interviews information record, *Source: self-elaboration*

Date	Function	Duration	Type of interview
04/03/2022	Warehouse manager	35 min	Presential
04/03/2022	Social assistance coordinator	40 min	Presential
04/03/2022	Assistant director	40 min	Presential
21/03/2022	Logistic and distribution manager	40 min	Online
29/03/2022	Logistic and distribution manager	55 min	Online

When performing semi-structured interviews, and by adopting a more interpretive approach, a set of questions can already be prepared in advance to ask (Saunders et al., 2019). However, this set of questions may vary from interviewee to interviewee depending on the course of the conversation (Saunders et al., 2019). In other words, in situations where it was relevant, additional different questions were asked and in other cases, the omission of some questions was also found reasonable. Moreover, new themes to study may emerge as a result of the interviewees' reflections on the questions. Therefore, the interview script made sure that key aspects were asked even if not in the same order, however, other questions have arisen, enabling the pursue of the interviews in a non-constraining way. Nonetheless, the interviews were conducted in an unbiased and neutral way and by not pressuring the interviewees to give a specific response (Patton, 2002). Additionally, all the interviews were conducted in Portuguese and were recorded with due authorization from the interviewees and the institution.

In the end, the data analysis process is supposed to begin right after the interviews with the transcription of the recorded interviews into written form. During this process, some notes and observations from the interview are expected to be added.

Table 2 – Interview outline, *Source: self-elaboration*

	Question
1	Career experience
	- What is your current position in the Porto Food Bank? What are your main functions and responsibilities?

	<ul style="list-style-type: none"> - Do you have any background in logistics in terms of professional experience or academic specialization? Have you ever worked in this field before in other contexts/companies? - How long have you been in the organization? - Are you organized in teams? In which team are you inserted?
2	Organization structure and current processes
	<ul style="list-style-type: none"> - How is the structure of the organization? Where do leadership guidelines come from? Are the different banks managed independently or is there one central bank that manages all the others? - How is the relationship of mutual assistance between food banks in Portugal as they help each other in terms of resources? How is the lack of resources managed? (Example: lack of food products on one side (one region) and excess on the other side (another region)) - Could you please precisely describe the full process since the products are donated to the organization until it is delivered to the beneficiaries? - How is the current process for the beneficiaries and institutions to ask for help? - Who is responsible for defining the quantities of goods donated to each beneficiary institution? Has the way of allocating the goods to each institution changed during/after COVID-19? - How does the organization deal with food waste within your processes? - How does stock management works? Is there a concept of minimum stock (minimum amount to meet the demand needs) - How does volunteer management works? If there are unexpected casualties in the group of volunteers, what is the process to fill that gap?
3	Challenges and difficulties faced during COVID-19

	<ul style="list-style-type: none"> - In your opinion, what were the main challenges faced by the organization during the emergence of COVID-19? - Did these challenges/difficulties change the way the organization operates/works? If yes, how? - Which were the main logistical processes that needed to change during the COVID-19 pandemic? - During difficult times like the one we are still living, there is always room for improvement. Which were the main opportunities for learning/improvement that you found during this period? What were the lessons taken from these two last years?
4	Improvement opportunities for the future
	<ul style="list-style-type: none"> - What is currently missing in the logistical processes of the organization, so that it is possible to have a quicker response to needy families? If there was one thing you could fix in the current system to address food insecurity, what would that be? - In your opinion, how could the government, academics, and private or public companies be connected successfully, to help to develop a more efficient food distribution network?

3.3.2. Secondary data collection

Existing research on the topic of this thesis and closely connected areas were investigated and encompassed in the literature review section, to produce a valid background and hence, provide a better comprehension of the subject in question. In other words, secondary data was collected to further clarify the research problem, provide a proper literature review, and to better interpret the primary data collected. Secondary data was used to further clarify the research problem, generate an adequate research literature evaluation, and further support the interpretation of primary data. Therefore, secondary data encompassed in this study includes previously published research (academic articles), news articles, and conference papers.

Consequently, data from scientific articles, academic books, and technical reports were gathered from academic and credible databases such as EBSCO, Emerald Insight, Science Direct, and Google Scholar. These platforms were directly accessed through the

online library of Kedge Business School. Moreover, reports made by organizations like the United Nations, OECD, Euro Food Bank, and Food and Agriculture Organization of the United Nations, as well as their websites were also useful to produce this report. In addition, to strengthen the analysis, reports from April, July, September of 2020, and September 2021, published by the European Food Banks Federation were also consulted. Lastly, the budget and activity plan (2019 – 2022) as well as the statement of accounts (2019 – 2021) from Porto Food Bank was also assessed.

3.4. Data analysis

As this dissertation was thought to be written by following an inductive approach, a Thematic Analysis was assumed to be the best method to undertake the qualitative analysis (Patton, 2002; Saunders et al., 2016, 2019). This technique, which was manually conducted and as it will be thoroughly explained, mainly consists in synthesising and transforming the collected data into a more condensed form. After this, a phase which consists in coding the compacted data follows and then, it is initiated the stage of quest for themes that inductively emerge from the data. After the recognition of these themes, an answer to the research questions starts to be more evident (Patton, 2002; Saunders et al., 2016, 2019). Additionally, considering the case study nature of the report, besides the search for key themes and topics within the data as an analytical focus, there is also an emphasis in interpreting specific processes and activities. Moreover, by following the Thematic Analysis' mechanism, data reduction and clustering was used rather than the maintenance of data integrity (Patton, 2002; Saunders et al., 2016, 2019).

In the end, a procedure based on three steps (data familiarization, data coding, themes construction) was followed and it will be better explained now.

3.4.1. Data familiarization

Data analysis immediately starts in the moment of data collection and continues after its completion. It is the first contact made with the data, and a familiarization process instantly begins. Therefore, data collection and data analysis consist in an interchangeable process that affirms to be an interdependent one (Saunders et al., 2016, 2019).

After undertaking the data collection of the 5 conducted interviews that were fully recorded, a fully transcription was initiated. The interviews were performed using the Portuguese language and the transcription was maintained in the same dialect. While transcribing the interviews, self-notes and key ideas were written in a research diary that

would be further useful for the data analysis stage. Hence, becoming familiar with data is key, so that an immersion position is created and the search for themes is facilitated.

3.4.2. Coding

The coding stage consists in aggregating each piece of important data to a category with similar content. This piece of data can either be a word, a quote, a short statement, or a full paragraph (Saunders et al., 2016, 2019). Thus, after transcribing the interviews, several readings were done in order to underline the information that seemed relevant at the first glance. Then, codes start to emerge from the data and were properly noted. As the analysis continues, whenever a new important piece of data appears related to an already existing code, this information is added to the extant code. However, if it is a brand-new information and unrelated to previous codes, a new code is created.

Subsequently, within each code, it was aggregated every piece of data directly in form of short statements or paragraphs transcribed from the interviews. However, in most of the cases, the data was summarized or rewritten with the author's own words. After this categorization process into codes with the same meaning, the evaluation of the data turned to be much more facilitated. In addition, due to correlation of information, some codes were changed or rearranged into a single one.

The data coding was addressed taking into account the research questions and the objectives of the study, which is key to only extract the relevant information from the interviews' script (Patton, 2002; Saunders et al., 2016, 2019).

3.4.3. Themes construction

As the last round of this procedure, it is initiated the final stage of data analysis, where the focus is on looking for themes and relationships between them from the coding list. A theme can either be a composition of several codes that make sense and deliver key conclusions to the research, or a code itself. Therefore, at this stage, after analysing the codes and the relationships between them, themes start to emerge, and propositions and conclusions can be built. It is important to note that, the interpretation and relation of themes only begins, after all the data is coded (Saunders et al., 2016, 2019).

Summing up this 3-step procedure theory, it will be now outlined the overview of the interview's coding summary that can be better analysed in Table 3, to provide a more thorough understanding of how the transcripts of the interviews were converted into materials that could be actually analysed for this dissertation.

Firstly, after transcribing all the interviews, a condensation stage begins, where it is underlined all the relevant information from the transcriptions. Then, line by line, sub-codes present in the table in the second column start to emerge from the filtered data. After coding all the filtered text, the sub-codes were noted, where the corresponding related transcriptions from the text were written underneath the code, or instead, with information rewritten by the author's own words. Being this an inductive study that relies on qualitative data, comprehensive and detailed information focused on the understanding of the activities of Porto Food Bank have emerged from the data. Therefore, the sub-codes as well as the main codes were developed while going through the data, fitting all the relevant statements into each "category". Subsequently, the sub-codes were aggregated into a main code that can be viewed within the first column of Table 3.

After finishing this aggregation process, the search for key themes that infer from the main codes was started. Consequently, the insights that resulted from the coding process culminate on the emergence of three main themes, namely: **Porto Food Bank structural organization; processes pre-COVID-19 and how they have changed** and finally, **the main challenges during COVID-19**. A brief description to each code can be further consulted in the section 13.2., in the Appendix.

Table 3 - Interviews' coding summary, *Source: self-elaboration*

Main code	Sub-codes	Code definition
Theme 1: Porto Food Bank structural organization		
a) Teams' composition	<ul style="list-style-type: none"> - Responsibility - Accountability - Team management - Workforce integration 	- Assess how the different teams are divided and perceive which are the corresponding functions.
b) Collaboration	<ul style="list-style-type: none"> - Interrelationships - Cooperation - Alliance/partnership - Reutilization of food 	- Perceive the inter collaboration between other food banks and how they help each other in terms of share of knowledge and resources.
c) Organizational structure	<ul style="list-style-type: none"> - Guidelines - Rules - Decision making process - Configuration 	- Understand how the relationship works, between the Federation and the 21 food banks in Portugal.

Theme 2: Processes pre-COVID-19 and how they have changed		
a) Methods for sourcing products through partners/donors	<ul style="list-style-type: none"> - Basic procedures within the process - Contact the partners - Collaboration with donors (long term or short term) - Monetary/in-kind donations - Agreement procedures - Campaigns 	- Thoroughly understand the process: how does the resourcing plan works? How food bank gets the food products? Which are the extant partner-relationships? Which are the extant campaigns?
b) Inflow and outflow of products (fresh and dry products)	<ul style="list-style-type: none"> - Basic procedures within the process - Care and health evaluation of products - Food waste reduction - Stock management - Warehouse management - Volunteering management 	- Thoroughly understand the process: how is the process since the products arrive at the warehouse until they are delivered into beneficiaries' houses? Which are the steps and what does involve in terms of logistical procedures (stock management, warehouse management, volunteer management)?
c) Food baskets assembly	<ul style="list-style-type: none"> - Basic procedures within the process - Food products allocation - Flow of information regarding necessities per institution 	- Thoroughly understand the process: how are the food baskets assembled? How do they differ between institutions? How are the products allocated per food basket? How does the distribution of food baskets happen?
d) Helping requests (individuals or institutions)	<ul style="list-style-type: none"> - Basic procedures within the process of helping requests - Information to be collected per institution/individual 	- Thoroughly understand the process: How institutions/individuals get food bank support? Which are the steps and what does the food alimentary agreement states?
e) Institutions supported	<ul style="list-style-type: none"> - Food assistance agreement - Mutual cooperation - Way of operating of each type of institution 	- What kind of institutions are supported? How is the relationship between the food bank and the institutions?
Theme 3: Main challenges during COVID-19		
a) Processes changed	<ul style="list-style-type: none"> - Learning/improvement opportunities - Impact of COVID-19 - Reformulation of processes - Flexibility 	- Which were the processes most affected and how have they changed? What have been the improvements?

	<ul style="list-style-type: none"> - Resilience - Adaptability - Agility 	
b) Capabilities to sustain the adversity	<ul style="list-style-type: none"> - Resilience - Flexibility - Adaptability - Agility 	- Which were the capabilities to sustain such a disruptive event?
c) Innovation strategies pursued	<ul style="list-style-type: none"> - Innovation - Improved processes - Control intensified - Monitorization of processes - Formalization 	- Which were the main innovative strategies followed by Porto Food Bank team?

4. Portuguese Food Banks Against Hunger

4.1. Brief history of the beginning of Food Banks Against Hunger

The concept of Food Bank has initially started in 1967, when John Hengel was faced with a difficult situation, where a mother could not afford food to feed her children. After this, he called to a farmer asking for food products, which ended to be much more than what that family needed. It was the beginning of the first Food Bank, that was originally founded in Phoenix in United States. After the success of this idea, the concept quickly arrived at other geographical areas, such as France and Belgium, in 1984. It was then perceived the need of establishing a single and organized organ that should represent all the Food Banks in Europe. Hence, the European Food Banks Federation (FEBA) was founded on 23 September 1986 (European Food Banks Federation, Unknown).

In Portugal, the first Food Bank to be established was in 1992, in Lisbon, due to José Vaz Pinto that has brought his knowledge and experience from France' Food Bank. To minimize the food insecurity problem in Portugal, a total of 21 more banks emerged, being that the Porto one, was settled on May 1994. In February 1999, the Portuguese Food Banks Against Hunger Federation was created, which is the entity that ensures the accomplishment of the mission, vision, and values of the organization; organizes the strategy of the food banks, establishing and coordinating the various procedures to create a network to fight food waste and help those who are facing a food insecurity situation (Banco Alimentar de Lisboa, Unknown). Hence, the Portuguese Food Banks Federation is responsible for dictating the common functioning rules and the national dates of the biannual campaigns, that are supposed to happen at the same time, in Portugal. The federation is also responsible for representing food banks before third parties like for instance, national and international organizations, government, and public authorities; assist in setting up new food banks and stimulating the network by providing information and material resources, and distributing some donations at a national level, creating a vast chain of solidarity (Banco Alimentar de Lisboa, Unknown).

However, the 21 food banks are then independent in their action and decision-making process in the geographical area in which they operate: by supporting the institutions from the local district and by celebrating partnerships to fundraising, either in monetary terms or in-kind donations.

4.2. The concept and organization of the Food Bank Against Hunger

Food Banks are private institutions for social solidarity (IPSS)¹, whose mission is twofold: to fight against hunger and reduce food waste. Therefore, their principle is to “feed who is hungry”, by looking for where there are leftovers to distribute where there is a lack of basic food. In most of the cases, the leftovers are products that are not suitable for sale due to defects in the packaging or in the labels. These products were usually destroyed, a fact that is morally unacceptable and causes substantial market withdrawal and destruction costs. For farmers, companies and distributors, the purpose of their economic action is to be able to put the products on the consumer's table and profit from that. That objective totally fails when the circuit is interrupted before it has been completed. Thus, the role of the Food Bank is to bring these products to people who are totally or partially removed from the access to food consumption due to lack of financial resources. Hence, these organizations are responsible for collecting surplus food that would otherwise be wasted and distribute it to those who need it most, that cannot afford due to financial constraints (Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown).

Consequently, their vision is to look for a world where all human beings can have a guaranteed access to basic nutrition; while their values are based on donation and sharing, which should be reflected in all the activities undertaken by the food bank (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a).

The role played by Food Banks is totally autonomous and non-profit, not depending, for the performance of its activity, from the government, political parties, neither the church nor any other private entities. In this way, it is possible to conduct a transparent management that hinders the organizations of being affected by certain ideologies. Moreover, the organization commits itself to clear methods and strict rules, as for instance, their accounting is annually audited by an outside company, which guarantees their suitability for all banks (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a).

Food banks organizations are compromised to contribute to give a response as positive and quick as possible to the social solidarity institutions that they support,

¹ Legal figure adopted in Portugal for charitable and non-profit organizations

through the collection and redistribution of surpluses and donations of food products. Moreover, every food bank that is a constituent part of the European Food Banks Federation needs to obey to a set of principles which enshrines the operating principles and ethics that should be followed by every bank. This set of principles defines the specificity of Food Banks that makes them entities totally different and atypical in the associative world (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown).

Thereupon, food banks need to operate under four main axes: **supply, distribution, animation (volunteering), and functioning/operations** that will be now better explained.

4.2.1. Supply

The supply function is responsible for collecting food products and any monetary donations, that are fundamental to fulfil beneficiaries' necessity. Each food bank has its own supply commission, which organizes and creates partnerships with industries and national or local traders. Food banks are dependent from these offers that mainly come from private donations or companies essentially from the food sector industry, producers and retailers or wholesalers that mainly offer fresh products. Moreover, the surplus food can also come from the agriculture sector or from EU food aid programmes, like for instance the Fund for European Aid to the Most Deprived (FEAD). In most of the cases, the donated food surpluses are a result of not being in a good condition to be sold, but in a perfect state of consumption, such as poorly labelled products, damaged or expired packaging. Contacts are also made with local canteens, restaurants, hotels bakeries, among others, so that their surpluses are not wasted (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown).

Moreover, food collection campaigns are essential to replenish the stock of each food bank, as this is how most of the non-perishable goods are donated.

Furthermore, the warehouse provision is also sustained by the two “bag campaigns” that happen annually (May and December), where citizens have the opportunity to donate products while they are doing their normal shopping at supermarkets. In addition to this, there exists three more different campaigns, namely: “Help voucher”, which consists of paying for a coupon at supermarkets that is then converted to the most required food products; online campaign called “*Feed this idea*”

which consists on donating money through a website that is then used to purchase food; and finally, “paper for food”, which aims to sensitize people to the environmental solidarity issues by collecting paper to deliver to a certified company, which in turn, for each ton of paper collected, it delivers 100€ that will be converted into food products. These three campaigns are national and managed by the Portuguese Food Banks Federation (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown).

Each food bank manages and plans its inventories, and it has a six-month stock management. More precisely, to manage the food that will be delivered to each institution, the food bank creates a distribution plan based on the food stock it has from each biannual campaign, which normally has a six-month capacity each, and based on the needs of each institution. However, every month, this planning is updated based on random donations made from partners, ensuring that basic products are never in short supply. In addition, products are also purchased through money donations made by companies and individuals when necessary.

It is worth noticing that Food Banks emphasize the importance of collecting donations always in terms of food products rather than on monetary terms. Indeed, when potential donors want to contribute to the cause with money, normally, the Food Banks ask the donator’ companies to buy the products they need the most at that moment. In most of the cases, the selling producers or companies, knowing that the purchase is done with the intention of contributing to the Food Bank cause, normally have the habit to offer a more accessible price.

However, there are cases where the donator companies do not want to undertake the purchase and the Food Bank is obliged to do so. The fact of being the Food Bank buying food products is contradictory and should happen just in extraordinary times. From one hand, being perceived from as a potential client on behalf of the companies, they would rather be encouraged to sell the products instead of giving. On the other hand, the approach of buying food products is totally against their principles of fighting food waste. It is indeed an approach that does not generate any added social value and that could wrongly prioritize the search for funds rather than the fight against waste, to satisfy the beneficiary’ needs. Hence, food banks always advert for in-kind donations rather than monetary ones, being that they are only resorted to, in extreme situations.

4.2.2. Distribution

Despite being the food banks responsible to collect food, these organizations do not directly deliver the products to the beneficiaries. Instead, they support other local social solidarity institutions whose mission is to fight hunger, that in turn deliver the food in the form of food baskets to needy families, or prepared meals served in nursing homes, kindergartens, or social canteens. All these transactions between the food bank and the institutions are carried out at the expense of each organization.

Before the products enter the warehouse, a strict quality control is carried out, ensuring hygiene and food safety (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown). Warehouse labor is quite demanding, and it is made by volunteers and collaborators who dedicate many hours to inventorying products and cataloguing them. After this, the products are then organized to be distributed among the solidarity institutions that hold a partnership with the food bank. The institutions are the ones responsible to go directly to the food bank to collect the allocated products, being that the institutions are the organs responsible for all the processes between the warehouse of the food bank until the products are delivered to the beneficiaries.

Food Banks only distribute what they have, as they are dependent on the donations received. The partnership celebrated between the two parties recalls this principle. Thus, it is up to institutions to obtain what the Food Banks are not able to provide them (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown). Moreover, the distribution of products among the various institutions is based on evaluations biannually; all the semesters the institutions are visited where they are supervised but not in the sense of oversight. It is important for the food bank to understand if the institutions are functioning accordingly to the food bank requirements and if not, it is the food bank responsibility to help the institution by giving training programs and workshops. Therefore, the regular visits are aimed to help improving and enhancing their work. Monitoring the institutions aims to build and reinforce a collaborative connection between the food bank and the institution in addressing difficulties, where there is an open relationship in the sense that they can contact the food bank if something goes wrong, so that solution can be worked out (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown). However, assessments are reciprocal as

institutions also evaluate the food bank, thus the bank's activity report is sent to each institution, as well as the report from each institution to the bank, ensuring transparency and mutual cooperation between both parties.

4.2.3. Animation (Volunteering)

Food banks as non-profit institutions, imply the need of a solidary workforce as much as possible: people who are willing to help others without receiving nothing in return. Food banks do not live by religious beliefs or politics, thus opening the doors to anyone who is willing to help. Volunteers really play a key role in any food bank and without them its existence is impossible. The fight against hunger has gain more meaning thanks to the enormous dedication of the people who collaborate with the food banks. However, some employees are needed so that the normal function of the organization can be ensured (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown).

4.2.4. Functioning/Operations

Food bank operations are ensured by resorting to resources from different sources, namely: donations in social services, materials and equipment donated by partners, assumption by third parties of the costs of exploration (some expenses are supported by third parties as for instance, total gratuity or part of the rent, including in some cases heating, electricity and water, free transport regularly or on time), and donations from individuals and companies (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown).

The function of each food bank is essentially organized into **six commissions** and **three services** (Banco Alimentar Contra a Fome, Unknown; FEBA, 2020a; Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown):

- **Supply commission, which includes the campaign services:** it is responsible for making the contact with the agri-food sector and agricultural cooperatives proposing a partnership in the fight against hunger. This commission also organizes the two campaigns carried out annually to collect food in supermarkets.
- **Volunteer commission:** aims to recruit volunteers, evaluate their skills and assess their interests so that, they can be allocated to the desired functions.

- **Distribution commission, which includes the support service for institutions and the stock management service:** is responsible for determining which quantities will be distributed to the institutions with the agreement of the direction; controlling the warehouse entrances and exits and the respective data entry in the computer system and carrying out the control of physical and computer inventories. This committee is also responsible for analysing requests of registration of institutions that want to have the support of the food bank in their operations. Moreover, the visits to the institutions, the assessment of their needs and operating conditions and the protocols agreements celebrated with the institutions is also ensured by this commission.
- **The administrative and financial commission:** is responsible for all economic and financial aspects of the food bank, from its accounting to budgeting. It is also responsible for requesting monetary donations to cover operating expenses, whenever necessary.
- **The technical commission:** is in charge of receiving and storing the products in the warehouse, prepare their departure and dispatch, supervising the cold and freezing conditions of the products that require this treatment, and lastly, carrying out the sanitary control of food products and the maintenance of equipment, vehicles and material.
- And finally, **the image and public relations commission** is responsible for everything that is related to the communication and image of the food bank, especially at the time of campaigns, producing all the material necessary to its promotion.

It is important to add a note to this point, as these **six commissions** and **three services** correspond to the expected different teams that the workforce (volunteers and employees) at each food bank should be envisaging, according to the European Food Banks Federation. However, these different teams are transformed into functions most of the times, being that in most of the cases, a single team accumulates several functions that should rather be distributed by commissions as previously stated. This mainly happens due to lack of financial resources to sustain a wider working personnel base and, this is the case of Porto Food Bank as it will be seen further in the report.

5. Porto Food Bank Against Hunger - Case background

5.1. Porto Food Bank characterization

The Portuguese Food Bank is divided into three main poles, North, Center and South Region that correspond respectively to Porto, Lisbon and Algarve. Thus, Porto Food Bank works as a reception point to the North Region in case of donations from the Portuguese Food Banks Federation. In this sense, the entity is responsible for distributing any donations from the Federation and other campaigns to the local smaller food banks. In addition, all the donations that are collected through the supermarket campaigns are also distributed by the Porto Food bank to the smaller ones that operate in the North Region. Being that Porto Food Bank functions as a receptor point and due to its dimension and geographical area, there is a strong relationship between Porto Food Bank and other smaller food banks from the Northern Region. Thus, in case there is a surplus of food products, most of the times, the Porto Food Bank is responsible for distributing the surplus to other banks. Normally, there are two options: the smaller banks can either collect it from Porto facilities, or the Porto Food Bank directly delivers the products to the other banks.

Regarding the characterization of Porto Food Bank, it owns a warehouse of 3000 m² and it has at its disposal 6 vehicles to undertake their operations and help around 60 000 individuals, within an area of 2 395 Kms². Moreover, currently, in terms of logistics, Porto Food Bank also possess one chest freezer for positive cold and another one for negative cold, with a capacity of 120 tons and a rack-storage for 630 pallets. With the help of 14 employees and their volunteers, Porto Food Bank is able to partner regularly with 300 institutions and sporadically, with 50 institutions (Banco Alimentar Contra a Fome do Porto, 2021). The working team is separated into 6 main functional areas (Table 4), namely, **distribution management** with 2 elements; **warehouse management** with 7 elements; the **social domain** with 2 employees; an **administrative area** with 2 more individuals and finally, an **assistant director**. Moreover, the food bank mission could not be accomplished without the **volunteering workforce**, which according to the latest data from 2021, is currently composed by 312 regular volunteers per month; 1000 irregular volunteers; 400 volunteers during campaigns in the warehouse and around 3000 volunteers during campaigns in the supermarkets in Porto district (Banco Alimentar Contra a Fome do Porto, 2021).

Concerning the functions of the different departments, the **distribution team** is

responsible for the stock management of the fresh and dry products in the warehouse. This means that, this team is accountable for allocating the quantities to each institution in accordance with the social area department, which is the principal medium that interacts regularly with the institutions and better knows their necessities. Besides the stock management, the distribution department is also the one who is responsible for scheduling the timeslots in which the institutions can come to the Food Bank to collect their corresponding products.

The **warehouse unit** not only coordinates the warehouse operations, but also all the vehicles transportation intakes and outtakes from either donator producers, companies or supply markets. Intakes applies when the donations are delivered into the food bank' warehouse, whereas outtakes applies when the vehicles go directly to the donator to collect the products. Moreover, this department also holds the responsibility for doing the monthly inventory and report it to the distribution team.

The **social area department** serves as a bridge between the food bank and the institutions supported, by redirecting them individual helping requests and by maintaining a constant interaction with them, so that the institutions can have guidance in their operations. This advice counselling is done with the intuition of capturing knowledge regarding the way the institutions operate and also because it is part of this partnership to better know the work they develop to the final beneficiaries. Hence, the social area department constitutes the most important means of communication for interchanging information between the institutions and the other teams of the food bank, namely the distribution and warehouse management teams. This unit is also responsible for the volunteering recruitment, social networks management and lastly campaigns management and everything that this task involves, such as ensuring that there are enough volunteers in the supermarkets divided by working shifts and that the transportation of goods between the supermarkets and the food bank' warehouse is secured.

Lastly, the **administrative area** deals with all the paperwork required to ensure the normal function of the food bank and, the **assistant director** is the member responsible for reporting everything that happens in the bank to the board of direction. It is important to add that there is an intercommunication between the different teams on a regular basis and a weekly meeting, where all the departments take part and different subjects are discussed. Every department needs to report every decision to the direction board or to the associate director of the food bank, so that a final judgment is secured.

On what concerns the **volunteering team**, it is currently divided into 5 operating

areas, namely, the fundraising team which was created during the pandemic to cope with the lack of food sources; the triage team, which is responsible for the selecting process of products that are in a good condition when they arrive at the warehouse; the volunteer management team which was also founded during the pandemic to manage the increasing number of volunteers and to better assemble the functions required to the volunteers. In addition, there is also the distribution and warehouse team, in which the volunteers are mainly responsible for assembling the food baskets and to help in the distribution of the food baskets to the institutions. Moreover, it also exists a nutrition team, which is composed by volunteers that are usually nutrition professionals or students. This team is in charge of giving nutrition training to the institutions, for those that need to cook the products or, instead to the beneficiary families, so that they are more aware of the importance to use the products to its fullest extent. In this sense, for the institutions that need to cook the products donated by the food bank, the cooks will be aware of the possibility to recreate dishes with leftover food by encouraging to have a 0% waste.

Table 4 – Functions per team in Porto Food Bank, Source: self-elaboration

Accountable team in Porto Food Bank	Commissions and services
Distribution management team	<ul style="list-style-type: none"> - Distribution commission, which includes the support service for institutions and the stock management service - Supply commission, which includes the campaign services
Warehouse management team	- The technical commission
Social area department	<ul style="list-style-type: none"> - Volunteer commission - The image and public relations commission - Supply commission, which includes the campaign services
Associate director	- <i>Reporting to the board of direction and coordination of all the teams</i>
Administrative team	- The administrative and financial commission
Volunteering	- Volunteer commission

	- Supply commission, which includes the campaign services
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Further in the report, it will be discussed the three main processes emphasized in the interviews as the most important ones. These are: **the process of aid request from institutions, the process of warehouse' inflows and outflows** and finally, **the process of food baskets' assembly**.

5.1.1. The process of aid request from institutions

Generally, Food Banks do not distribute directly the food products to people, but to particular and social solidarity institutions (IPSS). Hence, to receive food, the institutions, on its own initiative, must firstly apply to a food assistance request of the regional Food Bank and go through a rigorous evaluation process. The final result of this evaluation process will dictate if whether or not a supply agreement free of charge might be conducted with the region's Food Bank. After the institutions fulfil all the requirements to become a partner of the food bank, an alimentary protocol is celebrated, so that rules and parameters are specified for both parties, in which both entities are committed to do their best, so that the food products can reach the most necessity ones. More specifically, the institutions cannot sell any product received and the Food Bank is responsible for delivering the available products to the institutions, guaranteeing all the hygiene and food safety conditions. Usually, this process of evaluating the acceptance of an institution takes around 2 to 3 months to be completed, in the case of Porto Food Bank. The supported institutions know in advance that the Food Bank does not have all the products desired, and the limits of the partnership are clearly provided in the food assistance agreement, as the Food Bank only redistributes what they have and receive from donators. Consequently, in the absence of any important product, the institutions shall have the responsibility to acquire those products.

Hence, the institutions can either directly contact the regional Food Bank or the Portuguese Food Banks Federation. In this last case, the request is then forwarded to the food bank more closed to its area of operation. In the context of Porto Food Bank, the process of integration within their network is handled by the social area department, which normally deals with a network of 300 institutions, being that 180 more institutions are placed in a waiting list. These partnerships are meant to be in a constant contact with institutions to understand their necessities, how many beneficiaries they have, so that the

food baskets can be done in conformity with that information. Every time an institution asks for help of the food bank, the same process is applied to every entity. Thus, firstly it is asked all the documentation that state their working area, their geographical area, their principal mission, and the reason why the support of the food bank is important and impacting to the institution in that exact moment. In other words, the social area department tries to understand the historical of the institution, in the sense that, why the request has emerged in that time and not before.

When the contact to the food bank is done by an individual or a family, the request is directed to the closer institution of their residential area. After this, it is the institution that is responsible for ensuring that the individuals are evidently going through necessities, by visiting their houses and ensuring with the Social Security (SS)² their income record situation. In addition, the institutions that support families need to fulfil a familiar process, in which it needs to state their income level and their familiar expenses, so that food scarcity can be attested.

The type of institution that Food Banks in Portugal help the most are associations, followed by parish centers. Moreover, children are the priority group, followed by elderly people (Federação Portuguesa dos Bancos Alimentares Contra a Fome, Unknown). It is worth of noticing that, the food distributed to the institutions takes into consideration the service provided by each institution. For instance, an institution that supports elderly people does not receive baby food or an institution that only provides snacks and breakfasts does not receive rice or olive oil. This work with the institutions is updated monthly in conjunction with the social area department.

Porto Food Bank operates with 3 institution types, namely: **beneficiaries**, **intermediaries** and **mixed**. The **beneficiaries** are the ones that take food products to cook in their facilities and then, the needy families or individuals can benefit from having diary meals there. Examples of these facilities can be illustrated by nursing homes, disabled homes, social canteens, or kindergartens. Moreover, the meals can also be distributed on the street or in small shelters. The **intermediaries' institutions** are the ones that directly distribute the food baskets to the beneficiaries, while the **mixed** ones have the both strands. Moreover, the beneficiaries normally take twice a month a food basket of fresh products and quarterly take a food basket of dry products. The intermediaries take every

² Social Security is a governmental system that aims to ensure citizens' basic rights and equal opportunities in Portugal.

month a food basket of fresh products and other one of dry products.

As the work developed by the network of Food Banks Against Hunger is a necessary response, but one that is intended to be temporary, these entities act as a complementor of the work developed by the institutions, by encouraging them to not only distribute food, but also to provide support and follow-up for those who live in solitude and in unstable situations. This follow-up is critical, as this is the only way to ensure that these individuals do not become reliant on this type of assistance in the future.

5.1.2. The process of warehouse' inflows and outflows and storage of goods

The inbound process of the products can be divided into two formats: the dry or non-perishable products and fresh or perishable products. Usually, both type of products is received at the Porto Food Bank warehouse, which means that, usually, the donator companies directly deliver the products on site. However, there are cases in which, it is not possible to directly deliver the products and thus, the fleet of vehicles from the food bank needs to collect the products from the donators. The donators contributions are usually gathered by the fundraising team, which has emerged during the pandemic period. Before the pandemic, the sourcing of new partners was made by the distribution team in cooperation with the social area department.

Normally, the food bank only accepts products that are marked with a valid eat-by date. However, there are cases, in which companies deliver a declaration of responsibility, in which the products can be consumed until a certain date. Moreover, when the packaging says, “*consume until the expiration date*”, the product cannot be given or distributed after this date. However, if instead, the product says, “*consume with preference until this date*”, the product can still be consumed few days after the expiration date.

After doing the reception of the food products (perishable and non-perishable), the new level of stock per item is given to the distribution team by the warehouse team. Thus, the distribution team always knows the accurate quantity of each product, so that the quantities of fresh and dry products can be allocated to the institutions that are coming to collect the food baskets in the following day. It is further important to note that the food basket can either be constituted only by dry products or dry and fresh products, depending on the availability of perishable products in the food basket' collection day on behalf of each institution. As soon as the products are delivered to the institutions, it is of

their own responsibility to make the proper use of the products and to either directly deliver them to the beneficiaries or to cook them to the beneficiary families and individuals. Thus, the food bank operates to enhance the role of the institutions, that are the closer contact that the beneficiaries have.

Regarding the dry goods, the food baskets given to the institutions are primarily made of non-perishable products, which are done in accordance with the requirements of each institution. Hence, the first step is to weight all the products that are in a good condition and then evaluate the expiration date of each type of product that arrive at the warehouse; then, the products are evaluated on a scale of A, B and C, being that A-products are the ones with a longer expiration date, and C-products correspond to products with a lower period of expiration date. Then, if the product already exists, it is assigned to its appropriate spot; otherwise, it is assigned to a free space in the warehouse. After this, the products are organized on wooden pallets, and they are classified by weight and validation date. In the end, a warehouse guideline is prepared with the weights and quantities of each product, serving as a document that allows checking the products' availabilities of the warehouse. This document will further help to better distribute the products among the different food baskets for each institution.

On the other hand, the collection of fresh products is more complex, since the quality of the products is dependent on the effectiveness and efficiency of transport, as well as their packaging and the short period of validity underlying them. As such, the process is slightly different from the non-perishable products. Usually, the products need to be distributed in the following 2 or 3 days, within a maximum of 5 days. The products received on the warehouse are firstly weighted and then are submitted to a process of selection, which consists of the visual evaluation of the products that are in a good condition and the ones that are not.

The ones that are in a good condition are then submitted to a second weighing and stored in the distribution area or, in the cases that it is required, in the refrigerated areas, as is the case of cheese, yogurts or milk. The allocation of these products in the expedition/dispatched area is due to the fact that these products are dispatched on the same day or in the following few days, which does not justify a pure storage of the products.

The damaged products are also weighted and are classified as a "loss". In this sense, every product that is not in proper conditions of use, needs to be registered and processed as a loss, so that the donators are accountable of the actual product that was

used.

After this selection, the products are then divided by the institutions that will take fresh products on that day. The allocation of products is made considering the institution's ability to receive food and the number of families supported. In case not all the products can be dispatched in that day, or due to an institution's incapacity to transport, or due to a very small number of people helped by the institution, the leftover products are arranged to be analysed. Therefore, a quality check is carried out on the fresh products by a food control team of volunteers, which are responsible to indicate whether the products can stay in the warehouse for one more day before being shipped or not. If the quality is confirmed for one more day, the products are stored to be shipped the next day. However, if the quality is not confirmed, the products are declared as a “loss” and placed in the trash or delivered to Intermunicipalized Waste Management Service of Porto. On the other hand, in case there is any non-perishable product that do not comply with hygiene and food safety conditions, the food products are diverted to the Animal Protection Society that reuse the products to feed animals.

5.1.3. The process of food baskets' assembly

The food baskets that are prepared to be collected by the institutions are expected to be done until the 20th of every month. From the 20th until the last day of the month, the warehouse is prepared to do a confirmatory monthly inventory, so that the next food baskets of the next month can be programmed and prepared in advance. After doing the inventory, it is possible to exactly know the quantity of each product. Knowing this and the expected entries and exits of products in the next month, it is possibly to approximately calculate the accurate quantity of each product, and then, a constitution of a food basket can be idealized every month.

According to Porto Food Bank practices in the allocation of the food baskets, a criteria is followed taking into consideration the characteristics and the dimension of each family/individuals supported by the institutions. Hence, the intermediary institutions are assigned with a maximum ceiling of 100 families supported with an average of 3 people per family; while the beneficiary institutions are assigned with a maximum ceiling of 75 families supported with an average of 4 people per family.

The food baskets constitution is mainly done by the volunteers in the warehouse, which collect the stored products in accordance with the warehouse guidelines. This document dictates the quantities in kilos required of each product to the corresponding

recipient institution. It is important to notice that each warehouse guideline correspond to a single food basket, which in turn, corresponds to a single institution. After collecting the food products, a verification of the weight of the food basket is needed, in order to verify that the quantity of product loaded corresponds to the weight defined in the warehouse guide. After this validation, the person or persons in charge of the food basket, needs to sign the warehouse guide, stating that everything is within the established terms. Afterwards, when the institutions are directed to Porto Food Bank to collect the food baskets, the number of institutions present in the warehouse floor will depend on the number of volunteers available to conduct the food basket' delivery process. This means that, at the same time, there could be 3 or more institutions to collect the food baskets. The prepared food basket is then brought from the place where it was stored to the expedition area of the warehouse. Here, the weight of the corresponding basket is checked with the presence of a member of the corresponding institution, and some extra products are added, in accordance with the institution requirements. These surplus products normally are fresh products that have a short expiration date and thus, it shall be distributed as quickly as possible. Before the institutions proceed to their facilities, it is required the signature of a copy of the shipping guide. This signature is a validation and assurance that allows the Food Bank to track all the outwards shipments and control all the products that left the warehouse.

Porto Food Bank' focus is always to be able to deliver a diversified food basket to institutions, but without running the risk of not having enough products to distribute in the next month. Moreover, the food bank is also concerned to maintain a certain homogeneity and regularity in the products that are delivered, so that the families can benefit from food with a certain regularity. Therefore, the food basket constitution is always done by two teams, the distribution team, which knows exactly the available quantities of each product, and with the social area team, which better knows the necessities of each institution regarding the products that are most required and necessary for them. Every month, a food basket type is designed, in which some products are common to every institution. Then, each institution will get a different food basket in terms of quantity depending on the number of families and individuals that they help. After this, the direction board has to approve the food basket distribution proposal for every institution.

In addition, after doing the inventory at the end of every month, it is also possible to notice any lack of any product. In cases like this, a request is done to the fundraising

team, so that they can articulate with the food bank partners to ask for a certain product that is missing.

6. Main findings

In the following sub-sections, it is presented an analysis of the empirical findings based on the five semi-structured qualitative interviews conducted and on information collected from the budget and activity plan (2019 – 2022) as well as the statement of accounts (2019 – 2021) from Porto Food Bank.

Therefore, in the first point, it is scrutinized the case background and its problematic situation. Further, in section 6.2., a qualitative analysis of Porto Food Bank' main challenges will be explained where the first part of the first research question is answered (*“What were the main challenges to Porto Food Bank Against Hunger during the pandemic COVID-19?”*). To finish, the observable innovative actions and new methods taken by Porto Food Bank to respond to COVID-19 crisis will be discussed in section 6.3. that clearly describes *“how the challenges faced have affected their logistical processes”*. Hence, the second part of the first research question is also answered.

6.1. Porto Food Bank and COVID-19

Poverty affects more than two million people in Portugal, according to INE' (National Institute of Statistics)³ data from 2020 (iAlimentar, 2021). 2020 was an atypical year for the world economy, being that the Portuguese economy had a recession of 7,6% (DN/Lusa, 2021).

Currently, in Portugal, 21 food banks across the country support more than 450 thousand people, the equivalent of 4% of the population (Monteiro, 2021). Before the pandemic, food banks were used to collect food to distribute for more than 2 600 institutions, which supported around 420 thousand people.

However, with the emergence of COVID-19 and with the measures taken by the government, which were essential to prevent the spread of the disease caused by the Coronavirus, have led to extremely difficult and even desperate situations. Several households were left without any income or remuneration as a result of the collapse of many industries and business sectors, or significant reductions in disposable income. Considerable households profiles were left without any support, as for instance, families

³ Portuguese official entity responsible for producing and disseminating official statistical information, promoting the coordination, development and dissemination of qualified national statistical activity.

whose lives were perfectly organized and who had never found themselves in a situation of poverty before; people who were usually supported by solidary institutions that were forced to close down; people who do not have the financial capacity to buy the products they need, those whose only meal was the one they had access to at beneficiaries institutions; people who rely on the food basket they receive weekly or monthly; and to these are added the people who were unemployed, on sick leave due to family assistance with the inherent reduction in income, who were already in a precarious financial situation. Consequently, the number of requests for food aid did not stop increasing, a factor that indicates how thousands of families have fallen abruptly into a situation of despair and food insecurity. More than 10 000 families requested support from the Portuguese Food Bank, which corresponds to around 60 000 individuals that were financially affected by COVID-19 and that required food assistance (Costa, 2020).

This increase in new aid requests comes from new cases of poverty caused mainly by the unemployment of people who were dependent on precarious jobs or self-employed professionals, who only received their salaries when they work (Lusa, 2020). The new profile of requests is mainly from younger families with children or single-parent families, that had never been in a situation of poverty and that, at the time, found themselves deprived of their income (Monteiro, 2021).

In Portugal, in normal times and conditions, food banks can ensure their mission of distributing food to beneficiaries with the help of two big campaigns on commercial surfaces like supermarkets throughout the year, one in May and another one in December. These two collection periods are usually sufficient for the two following semesters of the year. According to data collected from the Portuguese Food Banks Federation, in 2019, the 21 Food Banks operating in Portugal distributed 23 382 tons of food (with an estimated value of 31,7 million euros), in an average movement of 93,5 tons per working day (Lusa, 2020). However, during the pandemic, these organizations were prevented from undertaking these two campaigns and thus, food banks had to face the risk of running out of stock. Hence, a new way of functioning of the organization was needed to face the huge challenges imposed on the institutions, in a really short period (Costa, 2020).

Regarding the Porto Food Bank, their operations are located in the district of Porto, comprising the municipalities of Porto, Matosinhos, Vila Nova de Gaia, Maia, Gondomar, Valongo, as preferential areas. Its action also extends to the municipalities of Amarante, Baião, Cinfães, Felgueiras, Gondomar, Lousada, Marco de Canavezes, Paços

de Ferreira, Paredes, Penafiel, Póvoa de Varzim, Santo Tirso, Trofa and Vila do Conde as it can be seen in Figure 8 (BACFP, Unknown).



Figure 8 - Porto district and its municipalities, Source: <https://br.pinterest.com/pin/641763015653270326/>

According to INE (National Institute of Statistics) latest statistics, in 2021, there were 231 828 resident inhabitants only in the municipality of Porto, which accounts for 2,4% less than in 2011. In 2021, 11,4% of this population is between 0-14 years old, while 62,6% is between 15 and 64 years (INE, 2021).

Porto constitutes today an embryonic city of the North region of Portugal that is the Metropolitan Area of Porto (AMP) (Figure 9). Located on the North coast of Portugal, the Metropolitan Area of Porto encompasses a geographical area currently composed of 17 contiguous municipalities, in an area of approximately 2 040 km² with a resident population of around 1 700 000 inhabitants (AMPorto, Unknown).

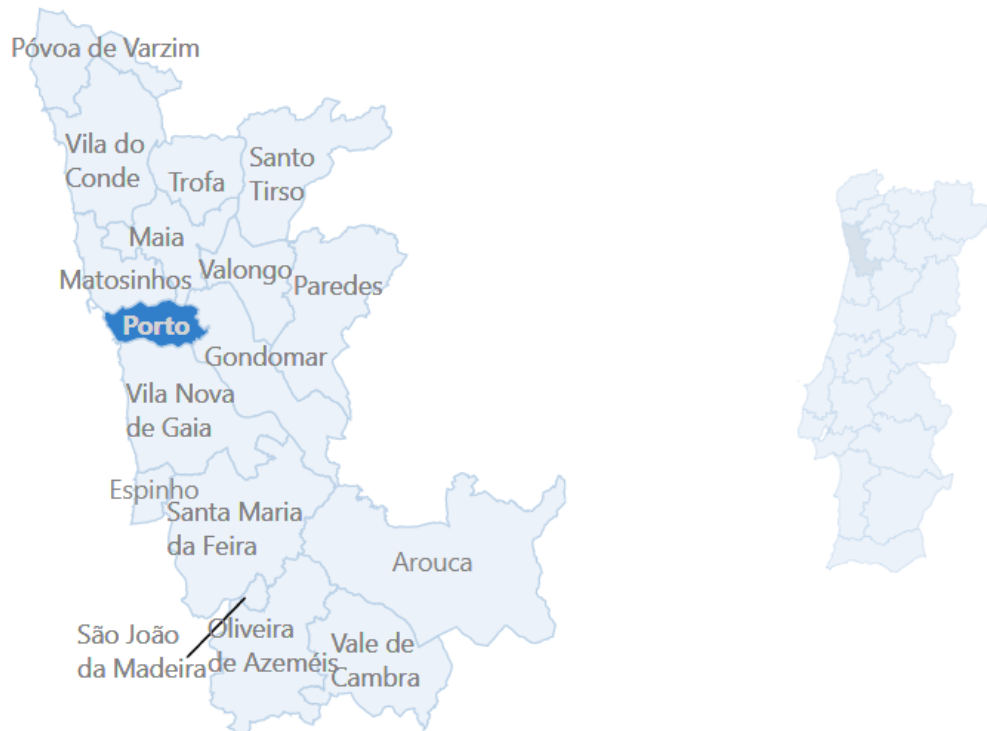


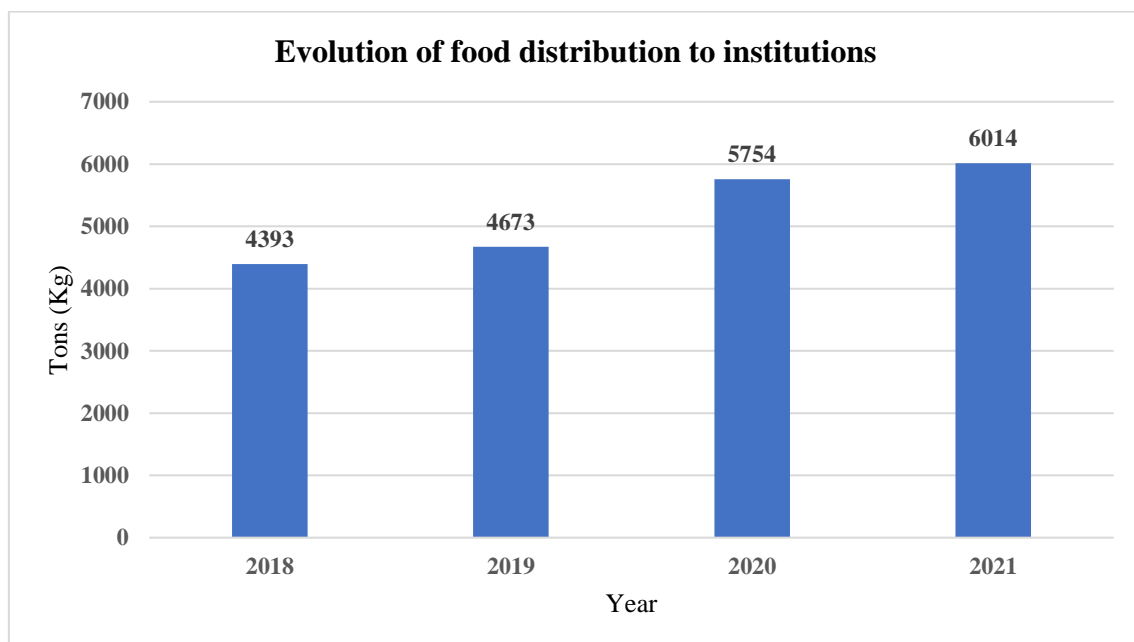
Figure 9 - Metropolitan Area of Porto, Source: <https://www.pordata.pt/Municipios>

The effect of the pandemic was also felt intensively in the Porto district, with an increase of 600% in aid requests for food. Porto Food Bank supports more than 300 institutions, which correspond to nearly more than 60 000 individuals. With the help of around 3 500 volunteers, 100 000 tons of food is distributed from their warehouse every month. According to Porto Food Bank's president, in 2019, the organization directly received 71 requests for help, which was forwarded to the district's social institutions, and in 2020, the requests exceeded more than 500 people. Equally, the profile of the beneficiary asking for help in Porto has also radically changed. If, before the pandemic, the majority of requests came from people with the Social Insertion Income (RSI) or pensioners; in 2020, the requests that arrive at the Food Bank Against Hunger in Porto, were essentially from people who lost their jobs and never imagined themselves going through that situation, being that most of them feel ashamed to ask for this kind of help. The average age group of the new requests varied from 20 to 45/50 years old (Lusa, 2021). In addition to the individual requests for aid, 33 new institutions ask for food assistance from Porto Food Bank in 2020, adding to a waiting list of 180 institutions, while 24 new institutions applied in 2021.

According to the IEFP's (Institute of employment and professional training)

monthly statistics by municipality, the 18 municipalities in the district of Porto had, in February 2020, 66 633 individuals registered in the employment centres. However, in December, there were 84 073 unemployed people, which represents an increase of 26% compared to February, the last month before the first lockdown was decreed due to COVID-19, in Portugal. Of the 84 073 enrolled in December 2020, 91% were looking for a new job and 56% had been enrolled for less than a year. More than half of the unemployed (56%) were women (VIVA, 2021).

Therefore, taking into consideration the COVID-19 crisis scenario and considering the fact that, the amount of food redistributed in 2020 was 23% higher than the food redistributed in 2019, as it can be seen in the graph 1; a set of lessons can be extracted from this period, to facilitate food redistribution, within future crises settings. In fact, over the course of 2020, a total of 5 754 tons of food products were distributed to beneficiaries, which makes a monthly distribution average of 480 tons, a value that is higher than the average of the previous year, 2019, by 91 tons (Banco Alimentar Contra a Fome do Porto, 2019b, 2020b, 2021).



Graph 1 – Evolution of food distribution to institutions in Porto Food Bank, Source: self-elaboration

Briefly, based on these values, it is noteworthy that Porto Food Bank was resilient enough to accommodate all the inconveniences brought by the pandemic. As mentioned in the literature review section, supply chain resilience is defined as the ability to withstand unexpected negative shocks without jeopardizing main functions and activities. Consequently, Porto Food Bank was able to deal with this issue and meet the increased

demand for food, by distributing 23% more than previous year amidst a ever-changing scenario. Indeed, the civil community was also more generous and sensibilized with Porto Food Bank's cause, responding to their request for help by contributing financially and with in-kind donations. In 2020, the increase in fundraising resulted equally in an increase in food redistribution to institutions. Even with the increase in aid requests, Porto Food Bank was able to respond to all institutions and improve the food baskets delivered to families (Banco Alimentar Contra a Fome do Porto, 2019a, 2020b, 2020a).

6.2. Porto Food Bank' challenges during COVID-19

COVID-19 crisis has shown that countries were not ready to cope with the uncertainties brought with such an event. The same has happened with food banks that were not immune to the effects of the COVID-19 problem, and they were forced to deal with several unexpected scenarios and challenges that will be now illustrated.

Porto Food Bank and their associated institutions were confronted with a common difficulty as a result of varied societal constraints imposed by the country, namely the challenge of maintaining their normal operations, without running the risk that their 14 employees were affected by COVID-19. Porto Food Bank feared the day that, if one member caught COVID-19, the entity would be forced to close their facilities, which would result in an impossibility of accessing basic goods on the behalf of the beneficiaries. Some measures were established within their facilities that served as an upgrade to warehouse operations, such as: security and hygiene precautions at every workstation, rotating schedules between employees and the implementation of teleworking for all the positions that were feasible, the fact that in the warehouse could not be present a lot of employees together and a security distance should be maintained.

On the other hand, a lot of institutions were forced to close due to the pandemic restrictions imposed by the government, mostly the beneficiaries' institutions (nursing homes, disabled homes, social canteens, nursery schools or kindergartens), causing a disruption in the normal logistical and transportation process with Porto Food Bank. For instance, some institutions, but mostly the nursing homes, were obliged to limit any contact with external partners and thus, they stopped going to Porto Food Bank to collect the food products. Besides this, restrictions, or even temporary interdictions of the access of volunteers who collaborate with these institutions as well as family members of the users, were stated to prevent risk of contagion. In addition, the number of assistants who collaborate in these solidary institutions has decreased, with the vast majority of them

being women who, as a result of school closures, have been obliged to stay at home to help their families, making it hard to continue giving some of the social support. Therefore, there were also times where the existent food products were accumulating in the warehouse and the food bank was forced to gather forces to directly distribute the products to the institutions, in accordance with the direction team of the food bank. Besides this, there were several days without enough employees and volunteers in the food bank to ensure a normal functioning of the entity, and thus, the collection of food products of some institutions needed to be cancelled, as the food bank did not have enough capacity to operate.

Furthermore, it was impressive the increased growth of the number of help requests directly to the food bank. Previously to COVID-19, Porto Food Bank used to account with 60 to 70 individuals' requests per year. However, in 2020, there were 700 requests. Consequently, the number of institutions asking for help also increased in Porto district, since the number of beneficiaries of each institution has drastically expanded. These changes in the number of beneficiaries supported were not always communicated to the food bank by the institutions, which have resulted in a lack of consistency in the food baskets delivered to them. Thus, in moments of pressure, the communication between institutions and the food bank was not always the best, which have originated a divergence on the quantities of the food baskets. Moreover, the increased number of helping requests received through e-mails or phone calls at Porto Food Bank occupied most of the time available of the 2 employees from the social area department. This fact has hindered these 2 employees of performing other duties, which led to delays in the overall processes of the food bank, since they serve as a mediator between the institutions and the food bank operations.

In addition, due to the pandemic, the visits to the institutions were suspended after the first declared lockdown in the country. These visits were substituted by online meetings, with an intention of not breaking the conversation with the institutions and to maintain the best interaction possible within the pandemic context.

On the other hand, the principal downturns in what concerns the normal supply sources were mainly related to instability and fluctuation. In detail, there was a decrease in donations from community gardens in the district of Porto; impossibility of undertaking the normal biannual supermarket campaigns; suspension of visits to the Porto supply market to safeguard the health of employees and volunteers and finally, the decrease in the surplus food donated by retail food companies, as a result of panic buying and

stockpiling as well as an increase of more direct requests for help from other type of solidarity institutions. Moreover, during this period, it was proved to be more challenging the task of finding sources of fresh products to distribute to the institutions, as the contact with the principal source of these type of products, mainly producers from the Porto supply market, was hindered by order of the direction board of the food bank, as it was considered dangerous to public safety.

Moreover, to support all the operations during this critical time, Porto Food Bank has also faced unanticipated costs and a reduction in financial resources. Hence, financial assistance was needed, so that a secure supply of food was ensured, and their activities could be scaled-up as demanded.

Finally, the most notorious defiance according to the professionals interviewed, was to maintain a certain resilience level towards the hazardous situation that was happening. In this sense, all the interviewees noted that the need to adapt to the new context and to find new ways of working, was their main concern every day. Moreover, accordingly, during this difficult period, the team has shown to be very resilient and adaptable to change. Indeed, it was uniformly felt by everyone that the team became more unified and the relationships between all the members were strengthened. The workforce members showed to be more committed to their work and at the same time, more cautious and rigorous, as they were afraid that other members got infected by the virus and the operations at the food bank needed to stop. In addition, it was also highlighted the efforts made by all members to look for innovative and creative responses to the problems that were emerging.

After emphasizing all the challenges faced by Porto Food Bank during the pandemic period, there comes an intriguing question: how could Porto Food Bank maintain their operations, when demand for food unexpectedly soared, but lacking sources of supply? In the following section, it will be analysed the inventive solutions that Porto Food Bank had to come up with during COVID-19 crisis, to carry out forward their mission.

6.3. Porto Food Bank' inventive solutions to COVID-19 constrains

Taking into consideration the five semi-structured interviews conducted, it was possible to perceive several innovative solutions that Porto Food Bank adopted during COVID-19 crisis. These solutions will be further enumerated and explained now.

The lack of fundraising sources as in a normal context, has obliged Porto Food Bank to readapt. However, the time period taken to find new potential partners to help in what regards the sourcing of food products, has obliged the entity to resort to an emergency fund plan. This emergency fund was used to buy several essentially food products immediately, which has never been used before. Hence, it was in this sense that Porto Food Bank has implemented **new strategies for fundraising**, both in monetary terms and in-kind donations type. Indeed, the lack of fundraising sources as in a normal operational context, has obliged the entity to readapt and manage itself to find new ways of fundraising their cause by creating and formalizing a fundraising team of volunteers. The need to be more incisive, concise, and demanding in the quest for new ways to raise funds was obvious to Porto Food Bank. The new fundraising team was totally accountable for one duty: to constantly look for new partners, producers, companies, public institutions, and associations that could contribute to fight food waste and improve food assistance in Porto district. Gladly, not only was the work of this team successful in collaborating with new entities and creating new partnerships with new institutions, that are upend until nowadays; but also, it was noteworthy the number of initiatives and efforts raised by private companies and national banks to increment awareness within society and monetarily contribute to the Portuguese Food Banks' mission. Indeed, the fundraising team was responsible for a considerable increase in the food collected in 2020, totalling 150 tons, allowing the food baskets delivered to the institutions every month to be reinforced. Moreover, in 2021, it was possible to double the weight of the food baskets delivered to the institutions every month. Summing up, the principal main fundraising sources in the pandemic period came from the work developed by the fundraising team, that resulted in a greater contribution from companies in the food sector industry. It enabled new businesses to donate food and allowed existing partners to expand their donations to Porto Food Bank. In addition, the execution of 3 new campaigns also contributed to the fundraising efforts, as for instance: the volunteers were encouraged to collect food products individually within their family circle and friends; campaigns undertaken in schools, universities, and companies and finally, within national scout groups (Banco Alimentar Contra a Fome do Porto, 2019a, 2020b).

On the other hand, as just mentioned, there were several initiatives, external to Porto Food Bank, that were immeasurable helpful to their work. More precisely, a food emergency network of 10 banks from the national financial system and more than 30 private companies, have come up together with a campaign named "All together" (Missão

Continente, Unknown).

This solidary action was based on a digital platform, where any other entity or even particular individuals could enter the website and contribute, either in monetary terms or in-kind donations that should be delivered in the nearest food bank. Moreover, to increase awareness within society, this campaign was also highly promoted through television channels, companies, and telecommunications operators, which allowed the involvement of the entire population through a telephone call worth 1€.

Additionally, this new fundraising team created was helpful to Porto Food Bank, in the sense that, a continuous work was developed to sensitize the public towards their alternative campaigns that already existed, other than the two main ones in the supermarkets. These campaigns refer to the online campaign “Feed this idea”, which mainly consists of donating money online through their website and also to the “Help voucher” campaign, where in the act of purchasing something in the supermarket, there is an option to donate a desired amount to Food Bank. After this, the amount of money collected with these 2 campaigns is then used to purchase food that might be missing.

Furthermore, **new working methods and processes** were rapidly established by the direction board of Porto Food Bank. Therefore, the normal routines of employees have drastically changed and a planning schedule with rotating positions in the Food Bank’ facilities was deemed necessary. In addition, security and hygiene procedures and social distancing rules were implemented not only between employees and volunteers that were working in the Food Bank, but also with the personnel from the institutions. Moreover, for the first time, it was implemented layouts in the warehouse to delimit the pathways routes for the employees and for the visitors from the institutions. In terms of the distribution process to the institutions in the warehouse, the process was also facilitated by changes that were implemented. Previously, there was not an order established, the first institutions to arrive were the ones to be first served and, besides this, several institutions were addressed at the same time. Usually, an average of 20 to 25 institutions used to visit the food bank every day. During COVID-19, this was no longer the case and schedules were implemented and spaced between institutions, so that the process could be held orderly. During COVID-19, the process was changed to be only 1 institution in the warehouse’ floor to collect their food baskets, due to the contextual conditions, and, in fact, the overall time taken to serve the same number of institutions in one day, has highly decreased, which turns the distribution process to be more fluid and more efficient. Hence, with the reduced number of employees in the warehouse, each institution started

to be accompanied just for one volunteer and, in addition, the route for the institutions in the warehouse was implemented and only one entrance and one exit could be used for the effect. Thus, a more organized and agile way to conduct the distribution was implemented and a great success was achieved with this new allocation method.

Likewise, with the new method to distribute the products to the institutions, the food bank started to take note of the time of the day in which the institutions showed up, as well as the number and the name of people from each institution, so that a control could be held regarding the possible appearing cases of COVID-19 within the collaborators. Hence, **new controlling systems** were also applied into their processes. With this historical, it was possible to find out that several institutions never appeared to collect food products within a period of 6 months and worse than this, is that these institutions have never notified Porto Food Bank about any issue. Cases like these ones were intolerable and unacceptable to happen in times of crisis and this fact has alerted Porto Food Bank to track this group of institutions. Thus, it was in this sense that, the social area department started to monitor all the institutions from a closer approach and implemented stricter procedures. Hence, if the institutions started to miss their schedule more than a certain number of times for no apparent reason and without any justifications, serious measures will be taken in the future, as this only shows that the support of the food bank is not that supportive and instead, a new institution from the waiting list could be sustained.

With the emergence of COVID-19 and the lack of fundraising sources from the supply side, a rising concern of the food bank, in the sense that, the food products were rigorously delivered to the final customer was evident. Thus, another new controlling process was implemented with the institutions that directly delivered the food products to the families/individuals. Hence, it started to be issued a declaration by the food bank that should be signed both by the institutions and by the family/individuals that received the final products. This declaration should state the products offered and the corresponding quantities of each item. In this sense, a guarantee to the food bank was ensured, so that the families confirmed that they did receive the expected products and that they were not deviated to other means. With this new process, the family is the final stakeholder that is turned accountable and responsible for making the good use of the products. On the other hand, a new regulating method was implemented to reduce any errors in the distribution of the products to the institutions as a result of the institution's growing concern to carefully ensure that the products were delivered to the final consumer - the needy

families/individuals. In this sense, before COVID-19, a volunteer was responsible for confirming the type and number of products in each food basket to the institution as explained before. During the COVID-19 period and currently, a new process is being implemented. Thus, a second and final certification is done for other volunteer at the exit of the Food Bank' warehouse before following to the corresponding institution. This new method has shown to be successful and reduced the human error that used to happen regularly before.

Finally, there was also space to **formalize functions and teams**. Besides the creation of the fundraising team initially mentioned, a management volunteering team was also based. The number of volunteers of the food bank has drastically increased and more formalized methods were needed to be implemented, so that the greater number of volunteers could be better managed, and the several functions could be correctly allocated to them. Actually, before COVID-19 crisis, the number of volunteers was around an average of 200 and has increased to 1200 volunteers since then. The management of the volunteers was not taken too serious before the pandemic. However, with the emerging number of new volunteers, new mechanisms were implemented and now it exists a team of 6 volunteers that is responsible for allocating functions to volunteers every week, depending on their availabilities. The increased number of volunteers can be explained, according to the information collected, by the increasing number of people that was temporarily unemployed for various months in the sectors of tourism and catering. Thus, people did not want to keep all day closed in their houses and started to do more volunteering activities. Moreover, this increase on the volunteer workforce was also beneficial to the food bank, as with the hygiene and security conditions, it was not possible to have the same number of people operating in the warehouse and thus, more rotating working shifts were created, and the volunteers were not so much overload with work.

7. Discussion

The main findings section clearly demonstrates that Porto Food Bank was able to redistribute a greater amount of food products to the supported institutions, among the unprecedented and challenging scenario brought by COVID-19. However, the food bank has only managed to maintain their operations due to the innovative strategies implemented, namely, **new strategies for fundraising; new working methods and processes; new controlling systems and the formalization of functions and teams.** These innovative solutions were deemed critical to Porto Food Bank enhance its resilience and agility, by emphasizing the importance of this type of organisations to minimize food insecurity during time of crisis (Capodistrias et al., 2021). Being able to rapidly obtain food products from different locations, undertake the necessary adjustments to old processes, adapt to a new distribution system while handling a higher demand in a continuous changing environment, reflects the importance of agility and resilience within supply chains (Shipman, 2020). Indeed, the emergency of COVID-19 crisis, has come up to prove that food banks play a key role on acting as a "safety net" for extra food in the supply chain food system, as well as a means of reaching out to the most vulnerable people in need (Capodistrias et al., 2021).

The main challenges normally faced by food bank organizations illustrated in the literature review, as for instance, the number of people in need of food assistance is constantly rising; donations do not normally keep up with demand; the lack of purchasing power of the final consumers; food banks face difficulty procuring nutritious and fresh food in sufficient numbers; were enlarged during the pandemic (Bazerghi et al., 2016). Several elements of the COVID-19 pandemic made it a difficult event to manage, with its ambiguity closely linked to its severity and the fear of the unknown complicating real-time management decisions.

The severity of the crisis has obliged all firms, profit or non-profit, to rethink their supply chain strategies (Gupta et al., 2021). For instance, several trends highlighted in the literature review section turned to become real and observable within the Porto Food Bank scenario.

Firstly, just-in-time inventory may be profitable and efficient within normal conditions. However, within scenarios of crises, emergency food baskets were needed to supply some of the institutions that run out of stock of food products. Moreover, Porto Food Bank needed to resort to the use of the emergency fund plan to buy products that

were missing. Therefore, it has become clear in the aftermath of the COVID-19 pandemic that this method fails to prepare global supply networks for severe shocks like the COVID-19 pandemic one (Raj et al., 2022). Furthermore, risk management and mitigation measures have become more important. Organizations must assess their supply chain strategy, supply chain architecture, and supply chain dependencies to minimize surprising reactions to future natural disasters and to efficiently resolve unanticipated interruptions (Queiroz et al., 2020).

It was also notable the trend towards digitalization, as all the feasible functions in the organization were transferred to teleworking as far as possible. Moreover, a lot of tasks started to being made through digital platforms. In the end, it is confirmed what Pujawan and Bah (2022) argued that, despite the pandemic's terrible implications, it has created and stressed the importance of digitization across various sectors, and it has considerably encouraged the reduction of COVID-19 spread, as teleworking and digitally coordinated logistics have helped to mitigate the pandemic's damaging effects (Kovács & Sigala, 2021; OECD, 2020).

Additionally, it was also emphasized in the literature review section to possess a diversified and backup base of suppliers (Butt, 2021; Pujawan & Bah, 2022). However, more important than this and consigning to the case of Porto Food Bank, the formulation of a local supply base with local partners, distributors and producers was deemed crucial to keep their operations working on. This fact ensures that a short food supply chain during social crises, can serve as a backup and complementary option for addressing the disruption of the food bank distribution system that might happen.

In consequence, after COVID-19, a few aspects are getting a lot more attention, such as digitalization, information and data collection, safety, adaptability, flexibility, sustainability, resilience, innovation, localisation and a diversified base of suppliers (FEBA, 2020c; Queiroz et al., 2020; Raj et al., 2022).

Furthermore, according to the literature review conducted, it was stated that the ability of the supply chain to react to unforeseen events, respond to and resist disruptions, and recover from them, while maintaining operational continuity is referred to as supply chain resilience. As a result, a resilient supply network can adapt to unexpected events and return to its original shape by rectifying specific disruptions or restructuring into a different configuration (Herold et al., 2021; Raassens et al., 2021). Consequently, Porto Food Bank has also reshaped its supply chain due to the innovations prompted by the crises and should be viewed as key lessons not only for the current pandemic, but also to

future social crises. Indeed, the innovative strategies implemented resulted from the adaptation of the organization to an unanticipated disruptive event.

New strategies for fundraising focused on finding new methods of fundraising their cause by creating and formalizing a fundraising team of volunteers accountable for the procurement of new partners. Moreover, the execution of three new campaigns also contributed to increase fundraising efforts and awareness among civil society. New working methods and processes encompassed new working shifts, teleworking implementation, stricter security, and hygiene procedures in all the processes, the implementation of layouts in the warehouse and lastly, a restructuring new way of allocating and distributing products to the institutions. New internal controlling systems addressed the execution of more streamlined processes with a final focus of ensuring that no food was wasted, and the extant food was adequately delivered to the final beneficiaries. Finally, the formalization of functions and teams enabled a better management of the fundraising and volunteers' team, which contributed greatly to keep Porto Food Bank' operations working.

Summing up, despite all the adversities faced by Porto Food Bank, the bank was able to redistribute 23% more food than in the previous year. This translates the resilience demonstrated by the organization, which amid an anormal situation, was able to recover from the shock, not only getting back to where the organization was before it but get back even better (Webb et al., 2021). In other words, regardless of the challenges faced, Porto Food Bank has demonstrated its responsibility, commitment, inventiveness, and receptivity to change. Porto Food Bank kept its activity going while adjusting and innovating their actions to the new normal (FEBA, 2020b, 2020c, 2020d, 2021). In the end, Porto Food Bank has embraced COVID-19 has an opportunity rather than a threat, opening up possibilities to improve to a more fortified and robust food supply chain system, by enhancing and accelerating creativity and innovation to develop more efficient and effective methods of work (Banker, 2020; European Commission, 2021).

Although it would be expected that COVID-19 circumstances would hinder the redistribution of food on behalf of food banks, as they would be unable to cope with all the sudden changes; it happened that a novel food supply chain developed from the pandemic (Capodistrias et al., 2021). Therefore, it is in this sense that, in the following section, suggestions based on the adverse pandemic scenario are made, so that the food supply chain improvement and development could evolve as a continuum in the upcoming years.

8. Recommendations

The recommendations with respect to the previously stated findings are offered in this section of the thesis. Hence, the following developed guidelines were constructed to be used as best practices for the future of Porto Food Bank. In this sense, the following suggestions serve as a conclusion for the research study by answering the second and last research question. (*“What are the lessons that can be applied for future disruptive events to the organization?”*)

As such, two narratives are presented next. Firstly, a set of lessons and innovative approaches that resulted from the pandemic period intensive learning, should be implemented in the short-term to produce long-term and sustainable effects (Section 8.1.). Secondly, three main actions are suggested to prevent the negative outcomes of future emergency events that function as a mitigation strategy (Section 8.2.).

8.1. Lessons and innovative approaches

Recommendation 1: Increase digitalization as an upgrade of processes

COVID-19 has accelerated the digitalization transition within companies like for instance, the establishment of homeworking and online meetings, so that the reduced human contact could contribute to enhance safety levels (Kovács & Sigala, 2021; OECD, 2020). Hence, humanitarian organizations should not be an exception, as the path towards a more digital future, will facilitate a lot of their operational processes.

Therefore, Porto Food Bank should maintain some practices in the digital format, that arise during the pandemic, and digitalize some other traditional activities that could rather be done in other means:

- Substitute all the feasible activities and functions to the digital or hybrid format, as for instance, adapt rotating shifts of teleworking; use of digital tools to create partnerships with potential donators instead of visiting their facilities; keep the meetings with the institutions in the digital format, unless it is of paramount importance the physical presence of the colleagues; all the recruitment process of the volunteers should be kept digital as well. Indeed, by resorting to the digital tools, Porto Food Bank is working towards a more sustainable world.

- Create and implement a digital platform, where the institutions that want to apply for the alimentary help of the Food Bank, could register their request within this platform, so that the overall process of the implementation of an institution within the network of Porto Food bank could be facilitated. The social area department could conceive a form with all the required information and documents. Moreover, after the admission phase of the institutions, and within this platform, Porto Food Bank could directly schedule the time slots in a calendar, so that institutions could know the exact moment when they should pick up the food products. Additionally, everything would be registered and easily accessible.

- Design a stronger presence within digital platforms as social media networks, by creating new and different online funding campaigns to increase awareness among civilians.

- A more robust technology is being considered to be implement by Porto Food Bank. According to the interviews conducted, Porto Food Bank management team is considering implementing a picking system within their warehouse to ameliorate the building process of food baskets. This is a much-needed innovation, but not so necessary according to the direction board, as the normal work can still be made without this system. However, this modernization would only benefit the organization, as the warehousing and distribution management functions would be much more efficient and agile, strengthening synergies to leverage their cause. Moreover, this system would also decrease the human error and the number of individuals normally allocated to these processes, that could rather be working in other areas of the Food Bank, thus enhancing its performance. It is certain that this modernism involves high costs that should be dealt with fundraising activities.

Recommendation 2: Implement controlling systems

To monitor the work developed by Porto Food Bank, it could be settled an annually survey directed to their stakeholders, namely the regular donator partners, the institutions supported and the regular volunteers. The aim of this survey would be to better assess the strengths and weaknesses of the activity advanced by the food bank, by the perspective of the partners that regularly work with Porto Food Bank team. The result of the surveys conducted could be useful to implement future improvements and innovations within food bank' processes.

Moreover, in accordance with one of the most problematic issues raised by the interviewees, a solution is needed to eradicate the overlapping of support requests. More precisely, Porto Food Bank currently helps 300 institutions. However, within Porto district, there are more institutions. Therefore, Porto Food Bank wants to commit itself to ensure that, the family or individual that is being helped by an institution supported within their network, does not receive any other help from any other institution, so that an egalitarian distribution of food products is enabled. A suggestion to solve this issue, would be that Porto' city council should join forces to collect all the documentation of the existent solidary institutions operating in Porto and that deliver food assistance to beneficiaries. After this, a database should be created, so that all these entities - the independent institutions and Porto Food Bank, - could closely monitor the individuals and families being helped. In such a way, ensuring that a family or individual is helped only once by an institution at a time, more vulnerable people could be helped.

Recommendation 3: Raising food waste and food insecurity awareness: foster stakeholders' alignment

When the interests of stakeholders in the supply chain are aligned, their individual decision-making processes contributes to the supply chain' overall performance (Shipman, 2020).

In the case of food banks, the supply chain' performance is solely engaged in making the food products with the right quality and at the right quantity, available to deprived people as soon as possible. For this reason, it is crucial that the promotion of the work developed by the food bank is ensured, so that more stakeholders could be sensibilized to their cause. It is then necessary to change and to renew the role of food banks, to reposition them at a national level and enhance their visibility to gain widespread support.

Some examples of practical actions that could be implemented, so that the role of Porto Food Bank in overcoming food waste and food insecurity gains attention, will be now highlighted per possible stakeholders:

- Civil society

- Promote more initiatives like for instance, campaigns, conferences and workshops that emphasize the work developed by the food bank, where it is displayed their main processes, the real quantities of their necessities and tons of food delivered

every month. It could also be considered the display of a family or individual testimony stating their conditions and main difficulties. The food waste problem could also be approached, so that individuals could be made aware and start accommodating leftover and cook in a more sustainable and responsible way.

- Cooperate with schools and universities to foster educational programs regarding food waste prevention and nutritious ways to reuse leftovers. Moreover, topics like food donation and ways of preventing food insecurity should also be covered, as means for ensuring that a future in which action in favor of less privileged is most likely to be adopted. In other words, the education system should be used as a fostering and prosperous place, by gathering students, parents, and professors in formulating best practices regarding the adoption of more sustainable diets and the sensibilization to conscient shopping options. This action could further instigate a change to a more responsible consumer's behaviour. In addition, the fact of being more proactive and visible, Porto Food Bank would have the chance to captivate and encourage more young people into their activities as future volunteers.

- Institutions and final beneficiaries

- Implement weekly workshops coordinated by a group of volunteers in each institution supported by Porto Food Bank, where it is always presented new recipes where the products used to produce a certain meal, can be reused to make another dish. For instance, the leftovers of vegetables can be used to produce a soup. In addition, it could also be addressed suggestions of recipes that contribute to a well-balanced and healthy diet, which includes ingredients that provide essential nutrients for improving immune system health. These workshops could be articulated with the nutrition team of volunteers, that could provide nutritional counselling to the beneficiaries, free of charge.

- Policymaking structures (Government)

- Food banks not only constitute a “motor” to process the extra food present in the food system network, but also a way to reach out to those in need. As such, their role in policymaking should be more emphasized, so that awareness is promoted regarding their cause. Therefore, the Portuguese Food Banks Federation should strive for reaching out more regularly the government and local forces, so that they face their work actively and grant them access to restricted areas and flexible conditions. Government and regional governmental entities should take their job seriously and deliver extra conditions,

resources and facilities, to help in their operations as much as possible. For instance, it is critical to provide additional monetary support to food banks and to assist them in building networks with other groups, public institutions, businesses, and key stakeholders.

- Other national or international organizations and institutions that strive for the same cause

- Promote the dialogue between not only national food banks, but also with international ones. The creation of a best practices sharing session, for discussion and conception of knowledge, would create an opportunity for food banks to share their experience, as well as their main challenges and difficulties over time. This initiative would consist in the commitment to learn new approaches that proved to be successful with other entities. This new knowledge production system could be held through an online meeting on a digital platform, so that the access to it is facilitated. In addition, the invitation of other type of organizations rather than food banks that fight for the same cause, would also be beneficial for all parties, as a different way of operating could help in bringing innovative ideas.

Recommendation 4: Implement self-sustainability and foster local alternatives

During disruptive events like the one experienced with COVID-19, it was noticeable the difficulty in finding new supply sources of food products, mainly fresh ones due to the downturns in this concern. Therefore, to rectify the possible decline of supply sources of fresh products in the future, as the decrease in donations from community gardens in the district of Porto; the suspension of visits to Porto supply market to safeguard the health of employees and volunteers and finally, the decrease in the surplus food donated by retail food companies; a more resilient and sustainable approach can be raised. As such, local vegetable gardenings managed by a group of volunteers and owned by Porto Food Bank could be thought as a renewable opportunity, where in time of crisis, could ensure at least, part of fresh products sourcing. Moreover, these gardens could be kindly provided by local and regional parish councils, or by Porto city council. In addition, the beneficiaries, at least the ones available and interested in, could also take part on the project, and give hours of work to this initiative, as a form of distraction and at the same time, intensive learning.

On the other hand, it could also be fostered local sourcing alternatives that would promote a shorter and intertwined supply chain. This supplementary strategy would pass to start partnering with regional family farmers or producers, which could also contribute with their surplus products when possible. Indeed, when faced with the lack of normal sources, a search for local alternatives would be an asset for Porto Food Bank in times of future acute crisis. Moreover, in case of lack of surplus on the behalf of the local producers, it could also be thought an acquiring system in order to sustain and help local farmers, by practising a reduced purchasing price to Porto Food Bank.

Furthermore, it is expected that after COVID-19 crises, the overall food industry is projected to be better prepared for future shocks and thus, it might be implemented new procedures that restrain large amounts of food to not be wasted and consequently, to not have higher sunk costs (Capodistrias et al., 2021). As a result, food banks should not only count on surplus food donations, but also promptly seek out for new, self-sufficient, and sustainable ways to assure access to a broad and consistent supply of fresh products.

Recommendation 5: Reinforce the partnerships that already exist and strive for new ones

With the emergence of COVID-19, the world has witnessed extraordinary collaborations among organizations, on an extent similar to war times. An example of this, is the incommensurable help directed towards hospitals and medical equipment supply chains. Collaboration is a value asset within organizations that are not always easy to manage and to achieve. Trustful, loyal, and responsible relationships with partners take time to develop and that is why Porto Food Bank should not only reinforce the already existing partnerships, but to strive to create new ones (Shipman, 2020).

Therefore, in order to Porto Food Bank maintain their mission in helping vulnerable people and appropriately respond to the growing requests in the long-term, is important to keep on rejuvenating their internal capabilities as well as on betting on building new collaborations with companies, foundations and other associations.

As stated in the main findings section, the creation of the fundraising team was crucial for Porto Food Bank not to tire in their efforts to fight food insecurity. For this reason, Porto Food Bank should continue to invest in this team, by encouraging it to constantly look for new partners. These new collaborators do not necessarily need to be companies that donate their surplus food, but could rather be local municipalities and authorities, volunteers' groups and student associations, local restaurants and hotel,

policy, or army forces. In the end, the partnership with these groups would be intended to not only collect surpluses of their operations or raising collection campaigns of food products in their establishments, but also to promote awareness campaigns regarding food waste.

Lastly, another collaboration that can be built to achieve a higher perception by the public and to draw attention to Porto Food Bank activities, would be a cooperation with media channels, as the local TV channel and radio stations, by announcing campaigns or broadcasting short television/radio reports or testimonies.

Recommendation 6: Mitigate the roots of food insecurity

More than providing food assistance, food banks should seek for ways to address root causes that provoke food insecurity. To work towards this direction, a team of volunteers could be trained to provide assistance regarding personal financial management issues, housing procurement, healthcare services and job seeking recommendations. Moreover, beyond the volunteers' team assigned to this function, there could also be formulated partnerships with solidary institutions that are more connected with the local community. Therefore, if these areas can be ameliorated, there will be a higher probability that food security is improved, as the independence and financial stability of the individuals would be enhanced.

Recommendation 7: Invest in the training of employees and volunteers

Develop training sessions where topics like lean management, kaizen principles and stock management are addressed. This kind of initiatives could be arranged by Porto Food Bank by inviting professionals in this area to provide them useful knowledge. Moreover, workers as well as volunteers could give their feedback on what could be improved in the operations, as they are the ones that better know the processes. In the end, this dynamic would encourage the workers to be more committed, as they can come up with new ideas to implement and feel accountable for improving Porto Food Bank' operations.

Recommendation 8: Adopt data analytic tools to improve forecasting as well as key performance indicators

As stated in the literature review, humanitarian organizations can take benefit from adopting tools and practices normally used in business logistics (Kovács & Spens,

2007; Wassenhove, 2006). Therefore, it is recommended that food banks follow best practices from profit organizations, in what regards supply chain forecasting. Thus, forecasting of vulnerable people's necessities could be estimated by considering the conjunction of different metrics within Porto district, such as, current unemployment levels, poverty rates, previous distributions, number of aid requests. In fact, a partnership with organizations like Social Security (SS) or the National Institute of Statistics (INE) should be considered so that data on unemployment rates, recipients of social insertion income (RSI)⁴, and other socioeconomic variables could be exchanged.

In this sense, future scenarios of demanded food could be expected, which would help Porto Food Bank to prepare in advance and better react to food insecure people's necessities.

In line with this, and to prevent from running out of stock in the most critical items, Porto Food Bank should ensure that the most demanded products are always on hand. This could be achieved by establishing long term partnerships with donators of that type of product(s) that have the possibility to donate regularly. Or instead in case the regular donations are not feasible for the partners, the fundraising team should invest in finding local alternatives to complement. Moreover, Porto Food Bank could resort to historical data to look for the average stock level needed to ensure the average demand. Whenever an item goes below a certain target stocking level, an alert should be generated to the fundraising team, so that they can immediately look for ways of replenishing the product category. A monthly analysis should be held to the target stocking levels, so that it can be adjusted with the demand.

Additionally, several key performance indicators could be settled to better assess the operational performance by the distribution and warehouse team. Therefore, number of institutions supported per day; tons of food distributed per month; the difference between the food resourced and the food distributed, could be evaluated monthly so that the warehouse operations could be closer tracked.

8.2. Mitigation plan

As previously stated, the 3 following recommendations serve as a mitigation plan, that essentially prevent some future risky situations that might happen in future disruptive events. In this sense, in a case a scenario similar to the pandemic one happens, Porto Food

⁴ Legal support aimed at protecting people who are in extreme poverty.

Bank could resort to these recommendations to enhance their operations and keep up their mission.

Recommendation 9: Establish emergency and contingency protocols

For the purpose of future crises, there should be already established emergency protocols, in the sense that, when facing unpredictable situations, there are a set of guidelines that should be followed. Therefore, it would be recommended that Porto Food Bank, after balancing the pandemic period, come up with a group of ground rules and instructions, so that in the future, there is a preprepared agile and reactive response to minimize the possible negative effects of a disruption. Indeed, an organization's ability to make strategic and quickly robust decisions to address important demands, both in the present and in the future, is dependent on effective planning (Accenture, 2020).

Thereby, a group of immediate procedures could be undertaken, as it would be better explained now:

- Pre-select a group of basic and essential set of food products, that might be in limited supply during pandemics or other critical events, to construct emergency food baskets capable of sustaining a family with an average of 3 individuals for a week. These SOS food baskets should be stored within Porto Food Bank facilities, in a way that, whenever necessary, there are food baskets totally equipped for an emergency. Whenever the expiration date of these products is coming to an end, without being needed to emergency situations, they should be immediately distributed to institutions and substituted for new ones.

- Be prepared to accommodate a 24-hour shift if deeply necessary, with working rotating shifts divided by volunteers and employees.

- Implement delivery distributions with limited human contact of small food baskets or food parcels to deprived people's homes or community centers. This initiative would help to solve two possible situations: the case when institutions were forced to close due to governmental restrictions or, the visits to the institutions were prohibited and the beneficiaries could not afford their normal meals or food baskets. Hence, the strategy would pass by having in advance different groups of volunteers organized per residential area, so that, in emergency situations or lockdown periods, each group of volunteers would be responsible for helping the local institutions that work with Porto Food Bank. Their assistance would consist of distributing emergency food baskets directly from Porto

Food Bank warehouse to the institutions, or instead directly from the local institution's facilities to vulnerable people's homes. Moreover, besides the emergency food parcels, there could also be distributed prepared meals confectioned within the local beneficiary or mixed institutions type, which are the ones fitted with kitchen. Therefore, in whichever case, where the normal functioning of the food humanitarian system is compromised, different teams of volunteers distributed by Porto localities would be accountable for providing support to both Porto Food Bank and the 300 institutions currently being helped by the bank. Thus, the posted volunteers would be responsible for providing help directly to elderly and disabled people, students in ambiguous situations and all the other cases of vulnerable individuals or families. Additionally, in order to help this new method of distribution which mainly consists in a home delivery service, which is totally different from what food banks are used to provide, partnerships could be made with the local municipalities, local or community associations (like for instance, Red Cross, Scout troop) or student organizations that could help by providing vehicles to perform a more efficient distribution. Moreover, surplus food from local restaurants or hotels, could also be directly distributed to the vulnerable individuals that live near the neighbourhood, having the volunteers as the intermediaries between the two parties.

- In upcoming cases, where there is an impossibility of the institutions to collect the food baskets of fresh and dry products from Porto Food Bank's warehouse, strategically partnerships could be held with the local municipalities or community associations, so that they can ensure the transport of food products from Porto Food Bank's warehouse into the institutions located in the corresponding geographical area.

- The help that Porto Food Bank provides to the 300 institutions currently supported is not only correlated with the dimension of the workforce, but also to the warehouse dimension. Therefore, an additional warehouse area could be ensured by partnering with local municipalities, which in time of crises could provide free areas within their municipal establishments (like for instance, parish councils, municipality seat, parish hall...). Hence, food baskets could be stored within these spaces, so that the local institutions would be able to get the products directly from these areas, or instead, the municipal vehicles could transport the goods straight to the institutions.

Recommendation 10: Create an alimentary emergency platform

In line to what has been said regarding Recommendation 1, a paradigm shift towards the digitalization is recommended not only because it facilitates a lot of processes, but also, disruptive innovations might turn the humanitarian food supply chain into a more sustainable, reliable, and resilient one to social shocks. Indeed, there is an increasing demand for technologies that reduce supply chains length, while addressing food insecurity issues. Therefore, it is in this sense that the creation of an alimentary emergency platform is suggested. In addition, the conception of this platform aims to facilitate the access of vulnerable people to food aid, as well as to provide information regarding the full process and steps to be followed to obtain food assistance.

An alimentary emergency platform will mainly consist of a website or an app, where vulnerable people, duly identified as a person with food necessities, can look for donated food within their residential area and pick it up in a specific place, or instead, ask for an order to be delivered at their place. To make this work, three specificities are needed, namely: a record of the necessities fulfilled by the beneficiaries on an application form; a report with individuals or organizations available to donate goods and in which quantity and type of product, and finally, a supporting documentation with the available volunteers to pursue the distribution process of food directly to vulnerable people housing or instead, to collection points, per residential area.

Briefly, after the registry of a request for help, the social area department of Porto Food Bank would analyse the request and would further inform the requestor about the collecting point closer to its residential area, or instead the procedures to undertake to a home delivery. The collecting points would be the network of institutions already supported by Porto Food Bank or in case these ones were forced to close due to governmental measures, new partnerships could be established between Porto Food Bank and local and regional municipalities, which would be responsible for storing the goods. Moreover, the local volunteers would be accountable for carrying out the transport of prepared meals or food baskets to collecting points or to the beneficiaries' homes within their residential area. This system would reduce the human contact to the minimum, while ensuring an adequate supply of food to vulnerable people. In addition, in this platform, it would also be possible for local restaurants, pastries or hotels to register the surplus food they have at the end of the day, which, in turn, could be collected by volunteers to then be delivered to needy people.

Recommendation 11: Foster institutional relationships with food-delivery companies (Bolt, Uber Eats, Glovo) and food-waste companies (TGTG)

Considering that during the pandemic crisis, and due to governmental restrictions, a lot of solidary institutions supported by Porto Food Bank were forced to close, a partnership with food delivery companies such as Bolt, Uber Eats and Glovo, would create value to both parties, by ensuring that the most vulnerable ones were provided with an adequate meal. Therefore, this recommendation is intended to be used during times of future crisis, as the delivery companies would be responsible for delivering precooked meals. The costs of the transactions with food delivery companies would need to be sustained by Porto Food Bank in cooperation with funds raised by partners, by institutions supported and monetary campaigns.

Therefore, taking into account the fact that a lot of institutions were hindered to collect the food baskets from Porto Food Bank, the same amount of products could be instead prepared and cooked by a team of volunteers in community kitchens, or instead, in suitable areas provided by Porto city council. After this, the workers of the delivery companies would come to pick up the meals and directly deliver the final products into beneficiaries' houses.

On the other hand, a similar partnership could be arranged with Too Good To Go, which is a digital platform company that fights the complex issue of food waste. It is based on application that connects individuals with stores and restaurants that have leftovers or so-called surplus food at the end of the day. The company has a win-win-win strategy since the users of the application get delicious food at a reduced price; the partners of Too Good To Go meet new consumers and reduce food waste by affording a certain monetary amount, while benefiting the environment through waste reduction (Too Good To Go, 2020). Hence, considering that there are times when the fresh products that arrive at Porto Food Bank warehouse cannot be dispatched in the same day that they arrive, or due to an institution's incapacity to transport, or due to a very small number of people helped by the institution, or any other near food bank in the North Region could not pick up the leftover products; the surplus products could then be arranged to be collected by Too Good To Go' users. In this sense and keeping in mind Food Bank' mission to fight waste and food insecurity, after exhausting all the possible options to redistribute the surplus products or to the supported institutions, or to institutions on the waiting list or to other food banks, a final option should be considered before considering the products as a "loss": the possibility of the products being collected by clients of Too

Good To Go. Thereby, Porto Food Bank could be a partner of Too Good To Go and have monetary gains from this partnership that could be further used to their cause.

9. Limitations of the study

Regarding the limitations of the present study, it can be considered the fact that, since the 5 interviews were only conducted with 5 former employees of Porto Food Bank, it can happen to be missing different perspectives that would rather lead to different conclusions, bringing ambiguity to this study. In this sense, it could have been interviewed individuals from the institutions that the food bank supports, from donator partners or even beneficiaries. In this way, it could have been analysed a different evaluation approach, with different opinions, suggestions and even lessons. Moreover, it could have been assessed the point of view of institutions or families that are supported and better understand their obstacles and needs, so that a better response and support from Porto Food Bank could be given in future occasions.

Furthermore, each food bank is an independent entity and has its own way of operating, by having a different access to partnerships and to resources, a variable warehouse dimension and a different number of collaborators and employees, by supporting a different number of institutions. Therefore, the recommendations and lessons suggested by this study might not be applicable to literally every single food bank or solidary institution with a similar structure.

10. Future Research

In the course of this work, some difficulties were encountered, namely in the scarcity of literature regarding logistics within humanitarian organizations. Moreover, there is a lack of analysis in what concerns innovative processes during disruption events and, in particular, during pandemic periods. Therefore, the literature building within this area should be promoted, so that the share of knowledge between humanitarian organizations is enabled and innovation processes could be learned from different scenarios. In this sense, there is an opportunity to improve resilience and be better prepared to unpredictable crises.

From another perspective, according to FEBA reports, the European Food Banks

have been generally effective and resilient enough in accomplishing their mission during COVID-19 crisis (FEBA, 2020b, 2020c, 2020d, 2021). It was noteworthy the forces mobilized to collaborate with food banks, so that their support did not miss to the final beneficiaries. However, the long-term effect of the pandemic is not expected to be less demanding than the short-term effect. In other words, food demand is expected to continue increasing, while food supply might be harder to remobilize again (FEBA, 2020b, 2020c, 2020d, 2021).

Therefore, it is worth studying the potential innovations, new collaborations and new technologies that might arise during the period post-COVID-19. Moreover, a comparison could be made between food banks within a certain region, like for instance, within a country or continental area.

Furthermore, another aspect that could be further studied, is to what extent a food bank is appropriately equipped with funds and resources to serve the local vulnerable people's needs. In the end, the final objective passes by relating the dimension of the food bank with the necessities of the population being served, to know if the corresponding food bank is efficiently working to the level of resources possessed. After this analysis, it would be possible to extract the cases in which the support needed is higher than the help provided and devise an effective strategy to combat the divergencies encountered.

11. Conclusion

The resulted insights within this dissertation were achieved through the analysis of the data collected within the case study of Porto Food Bank during a pandemic period. COVID-19 as thoroughly explained in this report, had caused unprecedented challenges to all economic sectors, affecting the more deprived individuals.

The principal aim of this study was to develop knowledge within the humanitarian food sector to raise evidence on how humanitarian logistics play an important role in alleviating social and economic differences. By resorting to the analysis of this case study, it turned indisputable the indispensable work developed by food banks in not only making use of the surplus food supporting the food supply chain, but also in redistributing all the available surplus food to where it is scarce. Indeed, Porto Food Bank has proved to be a motor of change to a new and unexpected environment, by revealing a great commitment to minimize food waste for a social good. However, it cannot be forgotten the wave of

solidarity that have arisen in Porto district in what concerns the help of volunteers and the mobilization of financial resources by private banks and companies, institutions, and individuals.

The first research question of this thesis was aimed to examine and evaluate how Porto Food Bank Against Hunger's processes and logistical operations required to be altered, as a result of the challenges imposed by the pandemic's impact. A comprehensive response to this question was achieved and can be further analysed in the previous section 6.2. and 6.3. Innovative practices were implemented to deal with the new scenario, from which lessons were derived to cope with future pandemics or other societal disasters.

The second research question, which the corresponding answer can be consulted in section 8, was intended to discover, and extract lessons that could be implemented specifically in humanitarian logistics in the context of this organization in future disruptive occurrences. As a result, to allow the establishment of a more agile supply chain to respond to humanitarian requirements, two approaches were recommended. Firstly, a collection of lessons and novel ways learned during the pandemic period should be used immediately to have long-term and lasting effects. Secondly, three primary steps were proposed as a mitigation plan to reduce the detrimental consequences of future disaster incidents.

Furthermore, despite being expected that as a result of COVID-19 limitations, food banks would not be capable of dealing with a brand-new way of operating; a disruptive and innovative new way of functioning has emerged due to the flexibility demonstrated by Porto Food Bank (Agyemang & Kwofie, 2021; Capodistrias et al., 2021). To prove this, it is again emphasized that 23% more food was redistributed in 2020 when compared to 2019, which only demonstrated the resilience level that Porto Food Bank had had to keep operating amid all the compounded imposed constraints. Porto Food Bank has gained expertise to function in emergency situations, by sourcing new food origins to replace the lack of donations and by devising more secure methods of food redistribution, minimizing the health risks to employees and volunteers.

In addition, it is important to notice that necessity has been the mother of innovation in the COVID-19 pandemic response (Harris et al., 2020). Indeed, innovation constituted a source of differentiation, which was indispensable to assure the maintenance of Porto Food Bank' activities. The new campaigns created, the new fundraising sources and the new working methods and controlling procedures constitute examples that have emerged from real necessities. In the end, it was these innovative strategies that enabled

Porto Food Bank to be operating under a new normality and performing their activity at significantly higher levels. Truly, Porto Food Bank has handled more food while restoring stability in what concerns the continuing increasing demanded food. However, its response is being given in a more efficiently way due to rigorous and intense pressured learning provoked by the pandemic (FEBA, 2021).

Therefore, it is possible to conclude that resilience and innovation were the two main strategies that permitted Porto Food Bank to act quickly and devise timely responses to address the fluctuation in both food supply and demand. Despite the particularly difficult context, it was possible to create a “human ring” making the difference to those who were in a difficult situation.

Lastly, it is important to keep envisioning the future. Indeed, looking into the future is increasingly an important role for the food banking sector. The number of institutions in need of support has increased and as such, Porto Food Bank states that more needs to be done. Therefore, new ideas to address the beneficiaries in a larger scale must emerge and the recommendations given within this report constitute a starting point. The coordination and acceleration of new initiatives for the long term not only determines the institution's ability to adapt to new circumstances, but also to improve their activity to meet new demands. Moreover, it is equally important to constantly learn from the adjustments made to the progressively inconstant and complex environment (Dalrymple & Dolan, 2020).

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13. Appendix

13.1. Interviews transcription

1st Interview

1) Career experience

- **What is your current position in the Porto Food Bank? What are your main functions and responsibilities?**

Neste momento sou funcionário, sou o responsável/chefe pelo armazém. A principal função aqui é coordenar o armazém, os transportes: saídas para o exterior a fornecedores; entradas e saídas; gerir o stock de armazém. Realizo também inventário com outro colega meu para confrontar o físico para comparar com o que está inserido no programa. Todos os meses fazemos o inventário, a partir de dia 20 que é quando acaba os cabazes, porque nós temos cabazes que começam no dia 1 até ao dia 20 todos os meses. E do dia 20 até ao dia 30, temos de preparar o armazém para fazer inventário para programar novos cabazes para o mês a seguir. Tenho 6 pessoas que são da minha responsabilidade que são os funcionários de armazém, giro uma equipa de 6 pessoas juntamente com o adjunto da direção. O dia a dia é mais ou menos isso, conforme vai chegando de empresas para irmos buscar produtos, vamos gerindo o dia a dia. Não há uma programação que exista e que dê para programar para o mês a seguir, para os próximos 15 dias a seguir..., pois dependemos dos donativos que nos dão.

- **What is your background? Do you have any background in logistics in terms of professional experience or academic specialization? Have you already worked in this field before in other contexts/companies?**

Trabalho aqui desde 2005. Entrei inicialmente como voluntário durante 2 anos, depois passei para funcionário de armazém e passado alguns tempos é que passei para responsável. Quanto à experiência nesta área, nunca o fiz noutros contextos, mas fui responsável noutra área no ramo automóvel, onde era responsável de armazém no ramo automóvel. Fui também vendedor neste ramo. Quanto à formação académica, apenas estudei até ao 9º ano. Fiz formações em várias áreas profissionais. Neste caso, para além de chefe de armazém, quando há problemas elétricos, eu é que resolvo, pois tive formação em várias áreas.

2) Organization structure and current processes

- **How is the structure of the organization where you are inserted? Where do leadership guidelines come from? Are the different banks managed independently or is there one central bank that manages all the others?**

Todos os bancos trabalham de forma independente.

- **How is the relationship of mutual assistance between food banks in Portugal as they help each other in terms of resources? How is the lack of resources managed? (example: lack of food products on one side (one region) and excess on the other side (another region))**

Não, os bancos alimentares estão divididos em 3 polos, que é a Norte, o pólo do Porto; Lisboa e no Algarve. O nosso banco serve como ponto de receção para a zona Norte. Tudo o que é doado através de Federação e campanhas, campanhas online, campanhas vales que vem de supermercados é tudo rececionado aqui no Banco Alimentar do Porto e depois há uma grelha que é dada pela Federação para distribuir a cada um dos bancos que pertencem à nossa zona que é Viana do Castelo, Braga, Aveiro, Coimbra, Viseu. Quando há produtos em excesso, que acontece às vezes, por norma ligamos para outros bancos a perguntar se querem. Se eles quiserem, nós mandamos entregar lá. Ou então, se tem meio de transporte, vêm cá ao Porto buscar, ou quando não tem meio de transporte disponível e nós temos a possibilidade de ir lá entregar, nós vamos lá entregar para o produto não se estragar quando não temos como distribuir esse produto, naquele prazo de tempo ou por validades ou por estado de maturação, pois muitas vezes os produtos já vêm com algum estado de maturação e não aguenta muitos dias, mas para ser consumível 1 ou 2 dias depois, dá e em bom estado e então tentamos agilizar dessa forma.

- **Could you please precisely describe the full process since the products are donated to the organization until it is delivered to the beneficiaries?**

No caso dos produtos secos como arroz, massa, salsichas, farinha, quando entram em armazém é feita uma avaliação por validade. Conforme a validade que eles têm, se tiver muita validade, temos de atribuir um de 3 códigos, A, B ou C. A quer dizer que tem muita validade e pode aguardar mais tempo no armazém para ser distribuído mais tarde, B é de média duração e no caso de não haver produtos suficientes para ir no cabaz, costumamos dar produtos B e os produtos C têm de sair no próximo dia ou nos próximos

dois dias. Quando se trate de frutas ou legumes que vem do mercado abastecedor e das hortas, o processo é diferente e por estados de maturação do produto. É feita uma avaliação visual na receção dos produtos e se tiverem bons que dê para aguentar 2/3 dias, no máximo 5 dias que aguenta, definimos na mesma o grau de A, B e C. Conforme esse grau, a minha colega responsável pela distribuição vai lá ver e vai dizer que tem de sair primeiro o C, depois o B e depois o A para não darmos tudo de uma vez para também podermos gerir por vários dias para podermos dar o mais diversificado às instituições para depois darem às famílias. O processo dos frescos, o processo é diário. No caso dos secos, depois de criada a categoria, os produtos são alocados por “rack”/palete com peso e validade que é para depois a minha colega mensalmente fazer a programação dos cabazes. Se sabemos que naquele mês vamos dar aquele produto que acaba naquele mês ou no mês a seguir e vamos gerindo assim dessa forma pelas validades e pela quantidade que temos.

- How is the current process for the beneficiaries to ask for help?

As instituições ligam à área social. Aliás, a instituição tem de estar inscrita na Segurança Social e as famílias também. Depois a área social daqui do banco faz a avaliação da família para a instituição. Temos várias listas de espera de instituições, sendo que cada instituição apoia várias famílias. Depois de ser feita a avaliação pela Segurança Social ou pelas nossas técnicas, é que é inserido aqui no sistema de distribuição aqui do banco alimentar. No caso das pessoas individuais que ligam diretamente para o banco, os mesmos são encaminhados para uma instituição da área de residência.

- Who is responsible for defining the quantities of goods donated to each beneficiary institution? Has the way of allocating the goods to each institution changed during/after COVID-19?

A alocação dos cabazes é feita por famílias. Por exemplo, uma instituição que tem 100 famílias não leva o mesmo que uma instituição que leva 30. A minha colega da distribuição juntamente com a área social é que são responsáveis por fazer a distribuição por famílias (x gramas por família conforme o stock que nós temos).

- Are the donations to the bank always done as food products? Or are there monetary donations? What type of donation do you prefer and why? In case of monetary donations only serve to buy food products?

Também há doações monetárias. Quando a doação é feita por empresas, a doação é maior parte das vezes por alimentos e particulares fazem-no de forma monetária, pois não têm noção do que é necessário. Uma empresa que produza arroz ou massa ou salsichas, conforme a carência que temos, pedimos para doarem daquele produto específico. No caso de haver doações monetárias, é usado para compra de bens, para manutenção de instalações e viaturas, ordenados. No caso de compra de bens, fazemos uma pesquisa de mercado e adquirimos o produto ao fornecedor mais barato.

- How do you deal with food waste in the food bank operations?

Quando é nas frutas e legumes, é feita uma triagem e essa triagem é pesada e dada como quebra. Justificamos sempre o porquê de algum produto ir para o lixo e quantos kilos é que são. Se o fornecedor passa uma factura de 100 kg e se 20kg foram para o lixo, temos de fazer uma quebra para justificar o que foi para o lixo. Quando é nos produtos secos, nós não recebemos nada fora de validade, a não ser que haja empresas que antes de mandar para aqui para o banco, ligam-nos e passam um certificado em como se responsabilizam que aquele produto pode ser consumido até ao dia X. Quando o produto é entregue à instituição, essa mesma justificação acompanha o produto como declaração da empresa que nos forneceu esse produto. Quando a embalagem diz consumir até, terminou a validade, o produto não se pode dar nem distribuir. Se disser de preferência, o produto pode ser consumido. Por norma entregamos os produtos sempre antes da validade e se na altura de fazer os cabazes, há algum produto em que a embalagem rebenta, temos de fazer uma quebra e dá para alimentar os animais através de liga de proteção de animais. Quando temos um cesto cheio de produtos rebentados de arroz ou massa, damos a eles.

- How does stock management works? Is there a concept of minimum stock (minimum amount to meet the demand needs)

Eu sou responsável do stock na parte física e no sistema é feito junto com um colega meu. No caso de falta de um produto, temos de procurar nas empresas quem é que nos pode ajudar. Temos também angariadores na rua que passam nas empresas a pedir.

3) Challenges and difficulties faced during COVID-19

- **In your opinion, what were the main challenges faced by the organization during the emergence of COVID-19?**

Conseguir que isto funcionasse sem afectar o maior número de pessoas para as pessoas não ficarem sem os bens.

- **Did these challenges/difficulties change the way the organization operates/works? If yes, how?**

Tudo mudou, desde usar máscara, luvas, ir almoçar 2 pessoas de cada vez, entrar por uma porta e sair pela outra, chegar aos carros e ter o cuidado de ter um desinfectante individual para usar o volante, manter a distância entre pessoas. Em todos os inventários que fazemos mensalmente há diferenças ou erros de stock e por vezes temos de conferir mais do que uma vez. Às vezes há erros nas facturas, por exemplo, pediram bolachas e nós demos bolos...e nós temos de ver para onde o produto foi e por que é que se enganaram. Antes da pandemia, tínhamos apenas uma “conferência” de produtos que era a pessoa que estava a fazer a entrega à instituição e agora temos 1 outra pessoa que confere à saída para minimizar o erro. Se por alguma razão a pessoa que está a distribuir os alimentos à instituição se enganou, temos uma 2ª pessoa a conferir para minimizar o erro. Começamos a fazer este processo após o COVID e isso minimizou muito o erro. Um humano a trabalhar, há sempre erro humano. Ninguém é infalível e no final do mês no inventário em vez de termos uma diferença de 100, temos uma de 50 ou 20. Como agora temos voluntários suficientes, pois antes não tínhamos, conseguimos adaptar outro sistema para funcionar de outra forma e para termos menos erros.

- **Did the organization felt the lack of donations?**

Não, sentimos que cresceu. As pessoas e as empresas foram mais solidárias ainda.

- **Which were the main logistical processes that needed to change during the COVID-19 pandemic?**

Os processos mantiveram-se os mesmos, mas com menos pessoas cá dentro. Os voluntários aumentaram na pandemia. Aumentaram muito, mais do dobro e agora conseguimos gerir melhor, e não sobrecarregamos tanto os mesmos.

- During difficult times like the one we are still living, there is always room for improvement. Which were the main opportunities for learning/improvement that you found during this period? What were the lessons taken from these two last years?

A equipa que trabalha aqui ficou mais unida. Empenham-se mais porque tinham mais responsabilidade para não apanharem o vírus e havia mais ajuda entre todos com as precauções que devíamos ter. Isso foi uma das coisas que foi mais notório.

4) Improvement opportunities for the future

- What is currently missing in the logistical processes of the organization, so that it is possible to have a quicker response to the needy families? If there was one thing you could fix in the current system to address food insecurity, what would that be?

Mudaria o sistema de pickings e de distribuição com pickings, mas isso seria um custo um bocado elevado que minimizava o erro humano. Por exemplo, uma pessoa está com uma lista com produtos a distribuir e vai pondo um “visto”, mas se por algum motivo a pessoa se distrai, há risco de haver um erro. Enquanto que se for um sistema de picking, ele debita logo automaticamente, vai reduzir o número de pessoas pelo qual o processo passa. A triagem dos alimentos tem de ter sempre mão humana, não há como mudar isso. Muitos produtos entram à unidade e saem ao peso, é um bocado complicado e no sistema de picking era diferente, havia menos erro nos stocks. A balança que é feita ao cabaz só pesa em meio kilo, a que é feita a entrada vai à grama.

- In your opinion, how could government, academics and private or public companies be connected together successfully, in order to help to develop a more efficient food distribution network?

Através de divulgação do que fazemos e angariação. Aumentar a equipa de angariadores, aumentar as visitas às empresas que são feitas ao custo deles que são voluntários.

2nd Interview

1) Career experience

- **What is your current position in the Porto Food Bank? What are your main functions and responsibilities?**

Sou colaboradora do banco alimentar, sou uma das responsáveis do serviço social, somos 2. As principais funções aqui no serviço social, é o serviço social que faz a articulação com todas as instituições, com as 300 que apoiamos. Essa articulação significa estar em constante contacto com as instituições porque nós temos 3 tipos de instituições: beneficiárias, mistas e mediadoras. O que é que isto significa? As instituições beneficiárias são aquelas que levam os nossos produtos para os cozinhar, para os confeccionar por exemplo num lar de idosos, um ATL ou um lar residencial de deficientes e juventude; as mediadoras são aquelas que levam os produtos em forma de cabaz para entregar às famílias e as mistas são aquelas que juntam as duas vertentes. Portanto, nós fazemos a articulação com estas instituições, primeiro para percebermos as necessidades que têm, quanto utentes é que têm para darmos o cabaz em conformidade com o número de utentes que têm e depois esta articulação está muito relacionada com a parte de questões mediadoras. O que é que isso significa? Como apoiam famílias, nós recebemos aqui muitos pedidos de ajuda, fazemos a primeira triagem do pedido de ajuda. Portanto, normalmente por telefone a pessoa pede-nos ajuda e nós fazemos logo uma ficha de encaminhamento e fazemos esta ponte para as instituições. O Banco nunca apoia individualmente ninguém, apoia sempre instituições e encaminha sim esse pedido de ajuda para a instituição mais próxima da área de residência da própria pessoa por uma questão local, de contexto...como ajudamos todo o distrito do Porto, não faz sentido apoiar individualmente uma pessoa de Marco de Canaveses por exemplo, porque primeiro não podemos lá levar um cabaz ou a pessoa não poderia vir cá e para além disso nós não estamos lá no local e portanto não podemos ajudar numa área mais abrangente como todas as instituições conseguem. Uma das nossas tarefas é também reunir com todas as instituições, as que são mediadoras, nós vemos os processos de família. Todas as instituições que apoiam famílias devem preencher um processo familiar, este processo deve ter os seus rendimentos e as suas despesas porque no fundo, a pessoa tem de comprovar a sua carência alimentar. Para além do contacto com as instituições, reunimos com todas as instituições... Uma das outras tarefas é os pedidos de ajuda, também

realizamos visitas às instituições da mesma forma que elas nos visitam todos os meses para vir levantar alimentos, nós visitamos as suas instalações no sentido de primeiro conhecer a realidade em que a instituição se insere e depois porque faz parte desta relação de parceria de conhecermos o trabalho que elas desenvolvem. Para além disso, o serviço social também está responsável pela gestão da campanha. Normalmente, dividimos entre as duas da equipa. Uma de nós está responsável por ter a certeza que temos voluntários naqueles supermercados e eu fico pela parte dos transportes, ou seja, tenho de me certificar que há alguém que vai transportar os alimentos desde o supermercado até ao banco alimentar do Porto. Para além disso, acumulamos também a gestão de redes sociais do banco alimentar, criação de conteúdo, criação de publicação...

- **What is your background? Do you have any background in logistics in terms of professional experience or academic specialization? Have you already worked in this field in other companies/contexts?**

Eu sou licenciada em Psicologia e com mestrado em Psicologia da Educação e mestrado em Economia Social. Em termos de área de trabalho, estive sempre na lógica do social... Antes de vir para cá, estava a trabalhar com Apoios aos sem abrigo, já trabalhei no Magalhães Lemos e em escolas...e continuo a dar consulta em termos de psicologia clínica também. Nós como serviço social também apoiamos a parte da distribuição em termos logísticos, vamos imaginar por exemplo que recebemos um camião de ameixas e estamos a dar ameixas às instituições que vêm hoje, o que o serviço social faz é logisticamente chamar mais instituições para ter a certeza que não vai ficar produto fresco que se possa desperdiçar durante o fim de semana por exemplo. Mas o que nós todos tentamos fazer é, portanto do armazém passa a informação de que há sobra de produto fresco que é preciso sair ou por causa da validade, ou porque há muito produto e está muito maduro, a distribuição toma nota da quantidade que é e pede ao serviço social para articular com as instituições que é uma das nossas funções, chamando as instituições a virem cá levantar os excedentes.

- **How long have you been in the organization?**

Desde maio de 2019.

- **Are you organized in teams? In which team are you inserted?**

Faço parte da equipa do serviço social. As equipas aqui no BA são: armazém, distribuição, serviço social, secretariado, direção. A equipa de voluntários está dividida em angariação, triagem, gestão de voluntários; distribuição + armazém; formação de nutrição que estamos a dar à disposição, a possibilidade das instituições terem formação na área de nutrição, para uma instituição beneficiária e que cozinha os nossos produtos, tentamos sensibilizar mais as cozinheiras, para serem mais criativas... o grande objectivo é desperdício zero e reaproveitamento total. E esta formação também está disponível para as famílias, ou seja, uma instituição que apoia famílias, nós vamos lá explicar às famílias como é que com os produtos que recebem, ou seja, com o cabaz de frescos e de secos, como é que podem rentabilizar ao máximo, como é que posso transformar em vez de por exemplo, as cascas da cenoura em vez de irem para o lixo porque aproveitei a cenoura para fazer sopa, se calhar posso fazer um caldo de legumes com aquelas cascas ou bolo de cenoura... A gestão de voluntários passa sempre por nós, temos por exemplo uma campanha de papel por alimentos que está completamente entregue aos voluntários, mas todos os meses o serviço social sabe quais são as instituições que deram papel e vão receber alimentos (quanto mais papel darem, mais recebem). Apesar dos voluntários serem autosuficientes, nós precisamos de saber de tudo.

2) Organization structure and current processes

- **How is the structure of the organization where you are inserted? Where do leadership guidelines come from? Are the different banks managed independently or is there one central bank that manages all the others?**

Em termos de cadeia de valor, existe a Federação de bancos alimentares de Portugal e depois existem 21 bancos espalhados pelo território nacional e ilhas. Nós temos a Federação que no fundo rege e cria regras de funcionamento e regras de atuação, mas depois cada BA é independente na sua atuação. O que é que isso significa? Cada BA tem poder de decisão de apoiar as instituições do distrito, tem a responsabilidade de fazer a angariação dos alimentos e também tem a auto gestão da campanha. A Federação por exemplo estabelece apenas as datas comuns a todos os outros BA para fazer a campanha.

- If an institution asks you for help, are you who decide to accept it?

Pode acontecer o seguinte, uma instituição que até é do Porto e faz o pedido à Federação, o que a Federação faz é enviar-nos diretamente esse pedido. Toda a análise e o critério de inclusão para o BA é sempre da nossa responsabilidade.

- How is the relationship of mutual assistance between food banks in Portugal as they help each other in terms of resources? How is the lack of resources managed? (example: lack of food products on one side (one region) and excess on the other side (another region))

Apesar dos 21 bancos, existem bancos que são pontos de referência. O BA do Porto por exemplo é o ponto de referência dos bancos do Norte. Portanto, aquilo que faz é uma constante articulação com o banco de Braga, de Viana do Castelo, de Aveiro e portanto sempre que temos excedentes, ligamos para eles para perceberem se têm necessidade. O contrário também acontece, acontece menos porque na verdade são bancos mais pequenos e portanto são de menor dimensão. No nosso caso, como somos ponto de referência, somos nós normalmente que fazemos a distribuição pelos restantes bancos.

- Could you please precisely describe the full process since the products are donated to the organization until it is delivered to the beneficiaries?

Começa pelo grupo de angariação que anda por todas as empresas, todas as hortas locais a pedir o contributo e para criar mais doadores. Depois os doadores comunicam-nos sempre se somos nós que vamos levantar o produto ou se eles têm a possibilidade de vir cá entregar. Quando o produto chega por si só ao BA já doado, primeiro que tudo vamos pesar aquilo que é doado, até porque o doador recebe um recibo de donativos da doação que deu; pesamos tudo; depois se forem produtos secos, não perecíveis (como massa, farinha, arroz, dos enlatados) são logo pesados, organizados e colocados numa paleta e organizados num rack e depois há um auto associado, um código de embalagem associada. Quando são produtos frescos, ou seja, estamos a falar de frutos, legumes ou iogurtes, aquilo que é feito é uma triagem do produto. Ou seja, nós temos uma equipa de voluntários que são responsáveis pela equipa da triagem e aquilo que vão fazer é perceber o estado de maturação do produto e por vezes isso significa que numa caixa de maçãs, estão 2 em mau estado e isso significa que se no dia a seguir deixarmos lá as maçãs, as restantes podem ficar estragadas. E, portanto, esta equipa de triagem entra, organiza estes

produtos e logo assim depois é dado entrada de novo peso, porque há sempre variáveis e depois essa informação é passada à responsável de distribuição que sabe exactamente que para o dia seguinte existe x kg de maçãs, de tomates, x caixas de iogurtes para serem doados às instituições do dia seguinte e depois, no próprio dia, faz a distribuição para as instituições dos produtos frescos; as instituições vêm cá normalmente 2 vezes por mês, ou seja vêm buscar frescos e também vêm buscar cabaz, embora haja aqui diferenças porque as instituições beneficiárias só vêm de 3 em 3 meses buscar cabaz e as mediadores que apoiam famílias vêm todos os meses, mas produtos frescos vêm sempre buscar...e depois de entregarmos às instituições, elas também levam uma guia que comprova os produtos que levaram e as quantidades que levam. E depois, a responsabilidade da entrega dos produtos passa a ser da parte das instituições, portanto as instituições são aqui nossas parceiras na ponte até chegar às famílias. Depois de carregado, é da responsabilidade da instituição fazer o bom uso daqueles produtos para cozinhar ou então para entregar às famílias. Numa instituição beneficiária, aquilo que perguntamos sempre é como é que a cozinha é gerida, ou seja, se são cozinheiras próprias, se as cozinheiras são sensíveis e criativas, como é que usam os nossos alimentos. Nas instituições mediadoras, aquilo que fazemos é todas as instituições quando entregam o cabaz, as famílias também assinam um papel que diz aquilo que recebem, para além de dizer o nome dos produtos, também apontam as quantidades. Porque é que pedimos isto? Por 2 razões principais: por uma questão de justiça, se todos os intervenientes aqui assinam um comprovativo que receberam os alimentos, a família também o deve fazer. Porque em boa verdade, a família é o fim do ciclo de doação, é este que mais importa e portanto nós temos de ter a certeza não só o BA, mas também as instituições de que a família recebeu e que vai fazer um bom uso daqueles produtos. Para além disso, nós entendemos que o assinar desta guia responsabiliza a família. Para além de receber aquele produto e aquela doação, está-se a responsabilizar para não desperdiçar aqueles alimentos. A 1ª e grande missão do BA está no nome “contra a fome”; a 2ª grande missão é o não desperdício. Tudo o que recebemos no BA são excedentes de produção, são produtos que já não seriam vendidos pois já não estão conforme aquilo que a comunidade aceita para vender e então nós recebemos e portanto não faz sentido se nós recebemos e estão em bom estado para doar que depois o fim da cadeia o vai desperdiçar. Esta é a maior preocupação do serviço social: que tudo aquilo que entra e sai para ser entregue às pessoas, é efetivamente para elas e que elas o recebem e que acima de tudo, os aproveitam da melhor forma e que se responsabilizem por aquilo que estão a receber.

- The food products are donated to the institutions that, in turn, deliver to the beneficiaries? How do these institutions ask you for help?

Todas elas fizeram um pedido ao BA por necessidade. Nós todas as semanas recebemos pedidos de ajuda de pessoas e instituições. A análise é feita para todas da mesma forma, também por uma questão de justiça. Portanto, sempre que uma instituição nos pede ajuda, aquilo que fazemos é pedir toda a informação sobre a instituição, qual é a sua área de trabalho, qual é a sua área geográfica, qual é que a sua principal missão de trabalho, porque é que o nosso apoio é impactante para a instituição e para além disso, pedimos documentação. Nós só apoiamos instituições legalmente constituídas. Precisamos de ter uma determinada documentação que até é pública, como relatório de contas, documentos internos e de atividades. Essa informação toda é para nós porque em boa verdade nós temos de perceber se a instituição é uma instituição que trabalha, que é fidedigna, que é correcta. Depois disso reúne sempre com o serviço social, nós queremos conhecer a instituição e as pessoas que lá trabalham. Queremos perceber melhor também o pedido que nos é feito, porque é que surgiu agora e não antes...porque é que agora é importante e porque é que agora tem impacto, depois visitamos sempre a instituição, é sempre feito pelo serviço social. Perceber se aquilo que foi dito por e-mail e dito aqui em reunião se é verdade e conhecer a realidade deles. A decisão nunca passa só por nós, nós damos sempre o nosso parecer enquanto serviço social, mas depois a direção vai perceber se aquela instituição deve ou não entrar. Neste momento, nós apoiamos 300 e estamos no nosso limite de apoio e até por acordo com a Segurança Social, mas temos 75 em lista de espera. Aquilo que fazemos sempre é... sempre que sai 1 instituição, tentamos perceber a qual é que podemos dar a seguir. Todas as que estão em lista de espera tem de cumprir estes requisitos, portanto fazer a reunião e fazer a visita e só depois todos os pontos organizados é que vamos nos sentar e pensar se podemos ou não dar entrada a esta instituição. E depois aquilo que acontece é, estas instituições que estão em lista de espera, pontualmente se há excedentes, nós chamamos para virem buscar produtos. Depois da instituição entrar para receber o nosso apoio, todas elas celebram um acordo alimentar connosco. Este acordo alimentar cria regras, estabelece regras para as duas partes de nós darmos o apoio e da instituição receber o nosso apoio e do rentabilizar ao máximo e em todas as reuniões com as 300 instituições que apoiamos, perguntamos sempre se o nosso apoio continua a ser impactante para a instituição, pois por vezes pode ser impactante naquele momento e depois já não o é. Temos instituições que..., a própria situação da

instituição ou melhorou ou alterou-se... mas para nós é importante esta parceria constante, pois a realidade de hoje pode não ser a mesma de amanhã.

- With the emergence of COVID-19, have you noticed an increase in the number of requests for help?

Sim, principalmente mais pedidos individuais... Nós por ano atendíamos 60-70 pessoas, em 2021, tivemos 700 pessoas... Portanto, 700 telefonemas ou pedidos presenciais aqui no BA a pedir ajuda. Com as instituições o mesmo aconteceu... ou seja, nós felizmente tivemos um maior aumento de doadores, porque também fomos mais incisivos na angariação, mas as instituições também tiveram situações de fragilidade e principalmente aquelas que já não eram apoiadas por nós. E portanto que sentiram mais aperto e precisavam de mais apoio e os pedidos aumentaram, sim.

- Even in the institutions that you already helped before COVID-19, did you noticed a difference on the level of requests?

Sim, principalmente nas que apoiam famílias. Porque eu se recebia um pedido, encaminhava para a instituição que é o normal... e aquela instituição que habitualmente apoiava 20 pessoas, de repente começou a apoiar 30 e portanto, nós aí também temos cuidado... e por isso é que todos os meses as instituições nos devem avisar de mudança de beneficiários porque o cabaz é sempre feito tendo em consideração o número de famílias que apoia.

- Who is responsible for defining the quantities of goods donated to each beneficiary institution? Has the way of allocating the goods to each institution changed during/after COVID-19?

Depois de feito o inventário, é possível saber exatamente a quantidade que nós temos de produtos... e temos que olhar para aquele stock total e pensar, vai haver entradas durante o mês, portanto previsão de entradas...saber o que é que vai ser doado, o que é que vai ser angariado. E depois, a distribuição juntamente com o serviço social “senta-se” e olha e pensa, este mês só vêm levantar instituições que apoiam famílias... então, como é que podemos construir o cabaz? O nosso foco é sempre... queremos dar um cabaz melhor, mas sem correr risco de no próximo mês não termos produto para dar... portanto, porque é que a distribuição articula com o serviço social e não decide por si só as quantidades? Porque até podia ser mais automático, não é? São x instituições, cada

instituição... no total as instituições tem x pessoas e então vamos dividir isto por X e dá este valor. É porque não é assim tão automático, não é? E nós também não podemos correr o risco de, agora entregar 6L de leite a uma família e no mês a seguir, só entregar 1L... Queremos manter aqui alguma regularidade para a família também saber com aquilo que pode contar. Então nós reunimos todos os meses, decidimos a constituição do cabaz em articulação com o serviço social e a distribuição... essa decisão e a explicação dessa decisão passa sempre pela direção que olha para o cabaz e pensa... OK, é justo, faz sentido... Já não nos perguntam se temos em atenção o stock, porque nós temos em atenção o stock... Por exemplo este mês, já fizemos o cabaz a ter em consideração que em maio vamos ter campanha e sabemos mais ou menos em média quanto é que entra numa campanha... e portanto já podemos ter esta previsão... da mesma forma que a responsável da distribuição sabe que uma empresa de leguminosas vem cá entregar no início do mês. Já fazemos o cabaz tendo em consideração essas entradas... para além disso, todos os meses eu faço uma listagem para a distribuição que diz exatamente que a instituição 1 apoia x pessoas e faz x refeições, etc..que a instituição 2 apoia x famílias que representa x crianças e x adultos... depois a distribuição e a preparação do cabaz, ou seja, eu posso definir em conjunto que cada família vai levar 20kg de produto.. (3L de leite, 2 kg de arroz, 3kg de massa...) e depois a distribuição é feita consoante o número de pessoas apoiadas na instituição... portanto uma instituição que apoia 10 famílias, não vai receber o mesmo cabaz que uma instituição que apoia 30... se eu decidir que é um cabaz com 20kg por família, vai ser por família consoante a instituição que estamos a apoiar...

- Are the donations to the bank always done as food products? Or are there monetary donations? What type of donation do you prefer and why? In case of monetary donations only serve to buy food products?

Alimentos sempre. Nós pedimos sempre que a doação seja feita em género... é isso que nós damos... nós não damos dinheiro a ninguém e é princípio do BA não comprar alimentos... porque achamos que, se há tanto alimento que se está a desperdiçar, não devemos comprar... a grande missão do BA é: se recebeste de graça, dá de graça... esse é o foco e em boa verdade, para uma empresa que nos doa é muito mais fácil passar um cheque, pode não ser necessariamente uma empresa agro-alimentar, pode ser de qualquer outro ramo e que passa um cheque e já está... Para darmos géneros alimentares, nós pedimos sempre que as doações sejam feitas em géneros. Claro que uma doação em dinheiro permitiu que nós juntássemos dinheiro para comprar um camião novo...um

camião refrigerado para levar os alimentos por exemplo. Claro que os donativos em dinheiro também são importantes, mas a nossa 1ª missão é ter sempre o armazém cheio para darmos alimentos às pessoas. Quem decide o que fazer com as doações monetárias é a direção... O plano de fundo de emergência – na pandemia tivemos que usar para a parte dos secos, faltou atum... a maior parte dos donativos em dinheiro são de pessoas particulares...também temos os nossos sócios que também participam.

- How do you deal with food waste in the food bank operations?

Há sempre desperdício... nós tentamos reduzir ao máximo, mas por exemplo se me chega uma caixa de 10kg de maçãs e 2kg estão estragados, temos de os deitar fora...tudo o que é lixo orgânico, alimentos não aproveitados e frescos são colocados num contentor à parte e a LIPOR vem cá levantar e é convertido em compostagem por parte da LIPOR. Quando são secos, vamos imaginar que na campanha, às vezes acontece um pacote de massa rebenta... aquilo que fazemos é pôr tudo numa caixa à parte de produtos rebentados e entregamos à sociedade protetora de animais que vem cá levantar os bens... O objectivo sempre é, se aquele produto não dá para ser aproveitado para a nossa alimentação, como é que o podemos transformar ou rentabilizar ao máximo? Mas tentamos que não haja desperdício nenhum...

- How does stock management works? Is there a concept of minimum stock (minimum amount to meet the demand needs)

A equipa responsável é a do armazém...em boa verdade, nós articulamos entre todos, apesar de ser uma instituição muito grande que apoia 300 instituições que representa 60 000 pessoas, somos apenas 14 colaboradores..., sendo que a maior parte deles são do armazém... tudo o que é cálculo e números, é do armazém e distribuição... no serviço social são pessoas

- How does volunteer management works? If there are unexpected casualties in the group of volunteers, what is the process to fill that gap?

Primeiro não podemos ter baixas de voluntários... todos os dias temos entre 30 a 40 voluntários aqui a trabalhar. Alguns voluntários são responsáveis pela distribuição, pela entrega de alimentos às instituições, são eles que fazem os cabazes, o ensacamento... São voluntários, que se não fossem eles, teríamos de colocar colaboradores a fazer essa

função. Quando temos algum decréscimo de voluntários, é começar logo a fazer apelos... em todo o lado, grupos de whastapp, redes sociais...

3) Challenges and difficulties faced during COVID-19

- **In your opinion, what were the main challenges faced by the organization during the emergence of COVID-19?**

Para nós BA, a nossa maior preocupação foi sempre nós nunca termos de fechar portas...aquilo que à bocado o responsável do armazém estava a dizer, estarmos sempre a desinfetarmos, sempre de máscara, irmos almoçar à vez, nunca estarmos mais do que 2 numa sala, nunca estarmos em contacto uns com os outros, porque não queríamos nada que houvesse um surto entre colaboradores e tivessemos de fechar...e mesmo assim, houve alturas que tivemos de ir lá para fora ajudar porque havia colegas com COVID-19 em casa. Mas, a maior dificuldade de todas era ter a preocupação de que nós nunca podíamos fechar... porque no dia em que isso acontecesse, significaria que não íamos entregar alimentos às instituições e que esses alimentos não iam chegar às pessoas. Nós temos de garantir que as pessoas iam continuar a receber os alimentos, ainda por cima numa altura em que o aumento de pedidos de ajuda foi brutal.. na altura de pico de pandemia, nós passavamos o dia inteiro a atender telefonemas de pedidos de ajuda individuais. Felizmente, tivemos a rapidez de execução e todas as insituições que nós pedíamos... imagine, ligava para uma instituição a dizer que vou enviar agora um caso de Gondomar em que a pessoa dizia que estava a passar fome... e a pessoa dizia OK, eu vou entregar um cabaz de emergência e logo no dia a seguir, a instituição vinha cá repor esse cabaz de emergência... Havia até casos específicos de insituições que vinham cá só buscar mais 3 cabazes de emergência porque receberam aquele pedido... ou seja, foi uma altura muito atípica em que era preciso estar a repor, ou seja, uma coisa que nós fazemos mensalmente, em que aquela instituição naquele mês apoia 10 famílias e no próximo mês apoia 11, são mudanças pouco variáveis... lá está e é 1 vez por mês e fazemos essa atualização...ali eram atualizações diárias porque logo naquele próprio dia encaminhei 5 novas famílias para aquela instituição... e nós temos instituições que têm por hábito deixar algum stock em armazém para estas situações de emergência e outras que não tinham e não sabiam como agir...

- **Did these challenges/difficulties change the way the organization operates/works? If yes, how?**

O rigor e a atenção que prestávamos antes da pandemia é exatamente o mesmo do que agora.... A forma como organizamos os cabazes e o rigor é exatamente o mesmo... aquilo que pedimos às instituições em termos de exigências para a nossa parceria é exatamente o mesmo... a única que coisa que eu poderia dizer que aumentou é a comunicação que nós temos com as instituições... em boa verdade, o rigor com que trabalhávamos, mantemos... O nosso princípio sempre foi o mesmo, não podemos baixar a guarda... e tivemos efetivamente de recorrer ao fundo de emergência alimentar que nunca tínhamos recorrido porque o nosso princípio não é comprar produtos, mas durante a pandemia, foi preciso ...exatamente para não baixar aquilo que é doado.

- **Which were the main logistical processes that needed to change during the COVID-19 pandemic?**

Sim. No serviço social não, em termos de processo foi a mudança para teletrabalho que até aqui não existia. Tivemos de trabalhar à distância de um telefonema, todos em casa...em termos de processo que foi uma melhoria até sentida pelas instituições, foi no momento da distribuição...portanto, antes da pandemia quem chegava primeiro entrava logo...a distribuição era feita para todas as instituições, podemos por exemplo ter 3 ou 4 instituições ao mesmo tempo a ser atendidas pelo mesmo voluntário... Na pandemia e pela diminuição de pessoas no armazém, o que aconteceu foi que cada instituição entra sozinha, é acompanhado por 1 voluntário que faz todo o processo de distribuição e no final da distribuição, há a saída pela porta de forma separada. E portanto, isto que aparentemente podia demorar muito mais tempo, porque quando chegam 30 instituições, uma de cada vez parece que demora mais tempo, em boa verdade, agilizou o processo de distribuição... porque eu voluntária estou dedicada àquela instituição e rapidamente faço o percurso e antes não...antes era muito mais confuso... e agora facilitou imenso o próprio percurso.

- **During difficult times like the one we are still living, there is always room for improvement. Which were the main opportunities for learning/improvement that you found during this period? What were the lessons taken from these two last years?**

Para mim foi a total resiliência a tudo isto... nós tínhamos de estar sempre aqui, estarmos prontos para cumprir sempre a nossa missão e acho que a resiliência foi a melhoria para todos, não só para o BA... foi sermos criativos, criarmos novas respostas, novas funções, procurar novas oportunidades de angariação, novos doadores... acho que nos colocou muito mais atentos e a pensar que de repente, podemos ficar sem nada, sem nenhum apoio... e em boa verdade, as insituições que nós apoiamos são no fundo a nossa única ferramenta para ajudar as pessoas... Portanto, esta resiliência, esta criatividade e atenção ao outro que já existia, acho que só trouxe melhorias... A campanha “alimente esta ideia” também já existia, mas nós reforçamos porque como nós deixamos de fazer campanha em supermercado durante a pandemia, nós reforçávamos muito esta resposta para que as pessoas pudessem continuar a doar... existiu também uma outra iniciativa não para angariar mais, mas sim para angariar de uma forma mais rápida que foi a rede de emergência alimentar... que não foi criada pelo BA do Porto, mas foi criada sim pela federação... e esta rede de emergência alimentar tinha como objectivo angariar por pessoas individuais, por insituições grandes que se associaram a nós, ou seja, os bancos, empresas grandes que se uniram precisamente naquela altura para garantir que não exisita ausência de produto nos bancos.

4) Improvement opportunities for the future

- **What is currently missing in the logistical processes of the organization, so that it is possible to have a quicker response to the needy families? If there was one thing you could fix in the current system to address food insecurity, what would that be?**

Falta, ou que nós já tivemos, mas não estava a funcionar, queremos no serviço social com o apoio da distribuição voltar a implementar este ano, o procedimento de bloqueios. O que é que isto significa? A insituição que apoia idosos e que nunca quer receber salsichas, que eu saiba de ante de mão que ela não quer receber salsichas, que não quer receber bolachas de chocolate ou pêras, por exemplo... portanto, nós devíamos ter uma resposta expedita e automática em que quando abre o documento de distribuição e

se eu tenho hoje para dar maçãs, salsichas... se aquela instituição não recebe, devia logo trancar aquela opção para nem sequer receber esse produto... o que temos neste momento é o bom senso da instituição que nos diz... nós não consumimos este produto e por isso não vamos levar ou é muito produto nós não vamos levar... mas ter um procedimento de bloqueios automático para nós logisticamente era espetacular. Ou também uma forma mais automática e integrativa para nós, serviço social para que não houvesse duplicação de pedidos de ajuda...o que é que isso significa? Nas 300 instituições que nós apoiamos eu tenho a certeza de que, aquela pessoa que é apoiada por aquela instituição, não é apoiada por mais nenhuma instituição... porque nós temos uma plataforma onde inserimos as pessoas todas e portanto não há duplicação de NISS's... mas nós apoiamos 300... e no distrito do Porto há mais 300 ou 600 instituições, aquela pessoa já não está a receber apoio... não sei, criar uma plataforma universal que eu pudesse rapidamente perceber que aquele NISS daquela pessoa não está a ser apoiado noutra instituição...

- **In your opinion, how could government, academics and private or public companies be connected together successfully, in order to help to develop a more efficient food distribution network?**

Acho que acima de tudo a forma como nós comunicamos para outros deve ser diferente, ou seja, se o nosso governo passar a mensagem de que 1/3 da alimentação que todos os dias nós produzimos é posta ao lixo... a noção de desperdício... se cada um em nossas casas olhar para o desperdício alimentar como um problema, a forma como depois vamos cozinhar, ou fazer as compras, vai ser diferente... acho que a informação que deve sair das grandes entidades deve ser atenção ao máximo ao desperdício, o que damos garantido hoje, amanhã pode não o ser... e acho que deve ser da responsabilidade deles também alertar para não consumo total...pela lógica do capitalismo, mas ser sempre pela lógica da sensibilidade e do olhar para o outro... o nosso presidente diz sempre, eu não posso querer ajudar o mundo inteiro se eu não conseguir olhar para o que está ao meu lado... sensibilizar para que, quem está ao nosso lado pode estar a passar por uma dificuldade.

3rd Interview

1) Career experience

- **What is your current position in the Porto Food Bank? What are your main functions and responsibilities?**

Sou funcionário do BA, sou adjunto da direção. Reporto à direção, portanto o meu trabalho aqui é gerir todo o BA do Porto, gerir as 14 pessoas que estão a trabalhar connosco neste momento, agora até são 16, portanto estou a gerir 15 pessoas. E o meu trabalho é fazer com que tudo isto funcione e a partir daí reportar à direção tudo o que se passa aqui dentro e a direção passar-me aqui informação para aplicarmos aqui no terreno.

- **What is your background? Do you have any background in logistics in terms of professional experience or academic specialization? Have you already worked in this field in other companies/contexts?**

Tenho uma pós graduação em gestão de serviços, portanto sou formado em gestão. Estive alguns anos a trabalhar na área do têxtil e na área do mobiliário e depois fui convidado para vir aqui para esta área da alimentação. O BA é uma IPSS que não é normal às outas, ou seja, aquilo que é normal ver numa IPSS é um lar de idosos, um ATL... Nós somos considerados inclusivamente pela Segurança Social atípicos, ou seja, o nosso trabalho é 100% logística. Não deixa de ser IPSS, mas é 100% logística, daí sermos diferentes dos outros.

- **How long have you been in the organization?**

Estou aqui há 3 anos e meio.

- **Are you organized in teams? In which team are you inserted?**

Estamos organizados por ação social, distribuição, direção, armazém, secretariado/administrativo.

2) Organization structure and current processes

- **How is the relationship of mutual assistance between food banks in Portugal as they help each other in terms of resources? How is the lack of resources managed? (example: lack of food products on one side (one region) and excess on the other side (another region))**

Então, existe uma federação portuguesa de bancos alimentares e depois cada BA tem o seu NIF, e portanto, cada BA trabalha de forma independente. Nós atuamos só no distrito do Porto e todos os outros bancos atuam nos seus respetivos distritos. Existe um encontro nacional de bancos alimentares e existe aqui uma troca de ideias, brainstormings, etc, que normalmente acontece a um fim de semana. E depois sempre que há alimentos que nós recebemos em excesso, normalmente dividimos pelos outros bancos. Sempre que há alguma ideia inovadora que surja aqui ou algum parceiro que nos diga que nos pode ajudar nisto, nós tentamos que ajude para todos os bancos. E, quem faz muito esse trabalho é a federação. Por exemplo, a federação recebeu agora um donativo de 50 000€ para equipar e apoiar todos os BA em material que precisamos em armazém e por exemplo, aquilo que sugerimos para nós é a compra de 15 porta paletes manuais e portanto tentamos ter sempre esta entreajuda entre BA e principalmente com a federação.

- **Could you please precisely describe the full process since the products are donated to the organization until it is delivered to the beneficiaries?**

Então, nós temos uma equipa de angariação que está no terreno a bater porta às empresas para saber se podem dar alimentos. A partir daí, não há um acordo formulado. Porque...hoje pode haver alimentos e amanhã não pode... portanto é um passa a palavra... e portanto aquilo que acontece é, há empresas que nos doam mensalmente ou semanalmente. Aquilo que fazemos é, vamos às empresas buscar os alimentos, de acordo quando as empresas nos dizem que têm alimentos para doar. Normalmente estes alimentos estão em fim de prazos de vida/validade, ou não estão próprios para serem vendidos, por exemplo o produto em si está excelente, mas o rótulo está rasgado ou o vidro está lascado ou a lata está “molgada”...portanto, isso já não pode estar numa prateleira de supermercado... então é doado ao BA. Nós normalmente vamos buscar, ou vêm cá entregar os alimentos. Portanto o nosso parque automóvel serve exclusivamente para ir aos fornecedores e não para ir às instituições... portanto, as instituições vêm cá, e portanto, os alimentos vêm parar aqui e de onde é que eles vêm....? Vêm

maioritariamente de empresas, vem do mercado abastecedor do Porto, vem do núcleo de hortas que existe aqui no distrito do Porto, da Povia do Varzim e de Vila do Conde, vem das campanhas que nós vemos nos supermercados, vem do programa europeu que é PAMC, vem do INGAs, que é uma retirada de produtos europeus, vem de particulares, vem de eventos, por exemplo, no próximo fim de semana, vamos ter um ginásio que vai fazer um evento com recolha de alimentos e vai doar ao BA do Porto. Pronto, estes são os setores de onde vêm os produtos, vêm aqui parar e aqui separamos entre produtos frescos e secos. Os produtos frescos, normalmente frutas e legumes, pão congelado, o peixe ou carne que é muito raro nós temos aqui...iogurtes, queijo e portanto são produtos que têm uma data de longevidade muito curta... esses produtos, se necessitarem, é feita uma triagem... temos uma equipa responsável que o faz, porque normalmente os produtos vêm numa caixa, por exemplo o tomate vem numa caixa e nós olhamos para ele e vemos que não está em boas condições, tiramos 4 ou 5 que estão podres, mas os outros estão bons... portanto, é feita esta triagem. E depois temos os produtos secos como é o caso do arroz, massa, leguminosas...são produtos que têm uma data de longevidade mais longa e dão entrada aqui nos nossos stocks e são armazenados...os produtos frescos normalmente no dia a seguir saem, no máximo 2 dias e estão a sair, dependendo das quantidades. Os secos não, normalmente estão aqui mais tempo, mas também porque nós temos uma maior quantidade de secos do que de frescos e portanto saem todos os meses para as instituições através dos cabazes de secos... portanto, todos os meses entregamos cabazes de frescos e cabazes de secos. As instituições vêm cá buscar os produtos e depois entregam aos utentes. Nós temos 2 tipos de instituições: beneficiárias e mediadoras. As beneficiárias levam 1 vez por mês frescos e levam 4 vezes ao ano, cabaz, portanto trimestralmente levam o cabaz de secos... e as mediadoras, levam 2 vezes frescos e 1 vez cabaz secos... e as mistas, a parte que é beneficiária leva de acordo com a beneficiária; e parte que é mediadora leva como mediadora. E assim que é um ciclo de vida de um produto.

- The food products are donated to the institutions that, in turn, deliver to the beneficiaries? How do these institutions ask you for help?

Nós aqui temos 2 tipos de utentes: a instituição e temos a família. Nós só apoiamos as instituições. Portanto, quando chega o contacto da família, nós contactamos por email ou por telefone, fazemos uma entrevista, registamos esse pedido e aquilo que fazemos é reencaminhar esse pedido para uma instituição geograficamente mais próxima. Depois a instituição tem de fazer o trabalho todo... ir visitar a casa, se tem necessidades

alimentares... pronto, fazer todo esse trabalho e depois temos a instituição que vem aqui pedir ajuda. Normalmente temos o pedido normal e a instituição tem que fornecer vários dados para ser apoiado pelo BA e se cumprir com esses dados, a instituição assina um acordo connosco e passar a ser apoiada pelo BA. Este é um processo que leva cerca de 2-3 meses, nós também temos de ir visitar a instituição...não é um processo simples, não é muito burocrático.

- Who is responsible for defining the quantities of goods donated to each beneficiary institution? Has the way of allocating the goods to each institution changed during/after COVID-19?

Issto tem a ver com os nossos stocks, mas depois também tem a ver com o que os utentes que cada instituição tem. E depois, normalmente é o departamento de distribuição que faz esse trabalho de logística e de saber o que cada um leva de acordo com os stocks que temos. Durante o mês, nós fazemos o cabaz para uma instituição-tipo, ou seja 3L de leite, 2 kg de arroz, 3 kg de massa e depois todas as instituições vão levar o mesmo tipo de produtos, mas em quantidades diferentes e de acordo com o número de utentes por instituição.

- Are the donations to the bank always done as food products? Or are there monetary donations? What type of donation do you prefer and why? In case of monetary donations only serve to buy food products?

Temos preferência sempre pela doação em alimentos. O ano passado foi feita uma compra de 154 000€ em alimentos.

- How do you deal with food waste in the food bank operations?

Tudo aquilo que é destruído aqui ou vai para o lixo, está documentado. Nós temos essa documentação toda. Agora, há produtos que nós mesmo assim tentamos aproveitar, por exemplo, 1kg de arroz em que o saco rasgou um bocadinho, corrigimos com fita cola e está ótimo para doar. Mas, imaginemos a massa que rasgou toda...ou outros produtos, o que normalmente fazemos é dar à sociedade protetora dos animais e portanto aqui conseguimos minimizar muito e aproveitar esses alimentos. Tudo o resto, aquilo que não está em conformidade, o caso do açúcar, leguminosas que se partiram... isso é lixo... é pesado e nós sabemos e damos baixa disso no stock e é considerado lixo. O lixo, nós temos o lixo orgânico e não orgânico, se tiver vidro deixa de ser orgânico, mas se

conseguirmos...lixo orgânico... e temos aqui a câmara municipal da Matosinhos que vem cá levantar o lixo e depois entrega na LIPOR, o que é orgânico e o que não é orgânico.

- How does stock management works? Is there a concept of minimum stock (minimum amount to meet the demand needs)

Normalmente, nós temos as campanhas nos supermercados e estas campanhas dão-nos cerca de 300 toneladas de alimentos. Ou seja, eu tenho cerca de 300 toneladas para entregar durante 6 meses... Depois o que é preciso é pôr a equipa de angariação de voluntários que neste momento são 4 pessoas a ir bater às empresas e a pedir... Nós temos empresas (que não há nada acordado como disse), mas por exemplo temos empresas que todos os meses nos dão 1000 kg de farinha, 1000 kg de açúcar..., 2 toneladas de arroz...Portanto, sabemos que temos isto e trabalhamos com estes forecasts... depois o que é que acontece? Durante as campanhas de supermercado, ao mesmo tempo decorre as campanhas online em que eu posso ir a bancoalimentar.pt e doar e ocorre também a campanha vale, em que eu não quero pagar ali, e chego à caixa e digo, olhe quero 20€ de arroz em vale...acrescento à conta e passo mais 20€... esses alimentos normalmente vêm ao longo dos 6 meses... portanto, a campanha é em Dezembro e esses alimentos normalmente estão cá em Fevereiro/Março...portanto aqui também nos dá para saber com o que contamos... e portanto trabalhamos sempre em forecast... por exemplo agora, houve uma campanha durante a pandemia, que foi a campanha “Todos Juntos”, em que se juntaram 10 bancos do sistema financeiro em que angariaram X... e esse valor serviu para comprar alimentos. Em setembro do ano passado chegaram-nos aqui 140 toneladas e agora em fevereiro estão a chegar 118 toneladas... portanto, há sempre campanhas a acontecer...

- How does volunteer management works? If there are unexpected casualties in the group of volunteers, what is the process to fill that gap?

Nós antes da COVID-19, tínhamos uma base de dados de cerca de 200 voluntários e cerca de 100 passam aqui durante o ano todo... antes, tínhamos algumas dificuldades e depois não havia um gestão séria dos voluntários... sabíamos mais ou menos que havia voluntários para toda a semana por turnos...quando entra o COVID, nós começamos a ter um número enorme de voluntários... as pessoas não queriam ficar em casa e queriam ajudar... e quando lhe estou a dizer enorme...nós em 2 anos passamos de uma base de dados de 200 voluntários para 1200 voluntários... nós tivemos mais 1000 voluntários

inscritos... claro que o voluntário que veio em março de há 2 anos atrás, hoje já não está connosco... já trabalha... o que é que aconteceu aqui? Nós tivemos muita gente da restauração e do turismo que fechou...as pessoas não queriam estar em casa e queriam trabalhar...quando o turismo abriu, estas pessoas foram trabalhar...continuam na nossa base de dados e aparecem aqui nas campanhas...às vezes vêm aqui fazer doações, estão sempre ligadas ao BA, mas deixaram de vir trabalhar... neste momento o que é que teve essa necessidade... houve necessidade de criarmos mecanismos para gerir estes voluntários todos e então a partir daí, tornamo-nos muito mais profissionais no que toca à gestão de voluntários. Criamos uma equipa de gestão de voluntários que neste momento são 6 pessoas a gerir estes 1200 voluntários...criamos grupos de whatsapp, todas as 5as feiras, as pessoas recebem um e-mail com um Doodle, para as pessoas se inscreverem na semana seguinte nos turnos... ou seja, 2ª de manhã, 2ª de tarde, etc...e vou-me inscrever naquele turno independentemente do que haja para fazer e depois, a equipa de gestão distribui tarefas: este vai fazer cabaz, esta distribuição, papel, triagem, inventário...etc como tem que haver um compromisso com os voluntários, eles chegam aqui ao banco e registam-se e nós a partir daqui sabemos quem vai, quantas horas fez, quantas vezes veio... e portanto, temos aqui um historial todo de cada um...

- Did these new team of volunteers emerge during COVID-19?

Sim, surgiu da necessidade de gerir o aumento de voluntários... como é que tudo isto se processa? Vou ao site do banco alimentar e inscrevo-me e aparece uma mensagem a dizer que vai ser contactado... e tem 1 pessoa que liga para o voluntário e faz uma pequena entrevista de 15-20 min, porque fisicamente não têm capacidade para estar no armazém e então, temos voluntários a ajudar em tarefas de escritório, como a gerir redes sociais, a fazer visitas a instituições, a ir ao mercado abastecedor, a fazer os eventos ao fim de semana... portanto, é preciso saber qual o perfil do voluntário, temos voluntários na área da gestão, na área de RH, é preciso perceber o perfil, horas disponíveis...a partir daqui recebe um e-mail de RGPD, portanto tem de responder ao RGPD e a partir daqui entra na nossa base de dados e passa a participar da nossa base de dados e a partir daí entra no grupo de whatsapp e começa a receber o Doodle. E portanto é assim que funciona, tentamos profissionalizar um bocadinho as coisas...

3) Challenges and difficulties faced during COVID-19

- **In your opinion, what were the main challenges faced by the organization during the emergence of COVID-19?**

O maior desafio quando tudo isto surgiu foi o desconhecimento, ninguém sabia que isto ia acontecer... como é que ia ser a nossa vida... nós tivemos uma coisa muito boa, eu falo por mim, nós nunca fechamos. Nós fechamos 1 dia...e de resto estivemos sempre abertos. Uma das nossas maiores preocupações foi, as insituições fecharem, as creches, por exemplo que fecharam... os lares de idosos que não fecharam, mas deixaram de vir ao banco e portanto o nosso medo era termos aqui alimentos a acumular e não conseguirmos distribuir e poder estragar. E depois uma das maiores preocupações que nós tivemos foi o aumento dos pedidos de ajuda... ou seja, nós, em 2019, tivemos 72 pedidos de ajuda e em 2020, tivemos 600 pedidos de ajuda individuais... tivemos de reencheminhar estes pedidos de ajuda para as instituições, as instituições tiveram um aumento e portanto, só que depois algumas não conseguiam vir cá buscar os alimentos... e portanto foi sempre aqui um mecanismo.. e depois deixamos de ter campanhas de supermercado... como é que vamos fazer? e nossa sorte foi que as empresas uniram-se todas e ajudaram-nos imenso, do setor alimentar e não alimentar...

- **Did these challenges/difficulties change the way the organization operates/works? If yes, how?**

Sim, melhoramos algum processos, mas isso deveu-se também ao número crescente de voluntários que tivemos...e portanto que nos vierem dar ideias novas e incríveis... uma das primeiras coisas que fizemos, foi caminhos de circulação aqui dentro...portanto, ao invés de entrarem as insituições todas de uma vez, às vezes até ficavam aqui todas juntas à espera cá dentro...portanto, hoje toda a gente espera na rua e hoje continua a ser assim...antigamente, podíamos atender aqui 4, 5, 6 insituições ao mesmo tempo... passamos a atender só 2 insituições de cada vez e portanto acaba a 1ª e temos outro voluntário a ir pegar numa nova... e portanto temos isto a circular e criamos caminhos, entram por um lado e saem por outro... e depois também criamos um novo posto, o posto de controlo para confirmarmos que está tudo certo; começamos a registar a hora de chegada, o numero de pessoas que vinha de cada insituição no contador... nós apontavamos numa folha, mas não olhávamos para a folha, nós tínhamos insituições que não vinham ao BA, que se esqueciam de vir levantar os produtos e isto para nós faz-nos

alguma confusão como é que há uma instituição que precisa de alimentos e se esquece de os vir buscar...e nós neste momento, começamos em outubro do ano passado, vamos agora fazer 6 meses e ao final de 6 meses, a equipa de ação social já tem ali um historial e já sabemos que há 2 ou 3 instituições em 300 que não é muito que em 6 meses esqueceram-se de vir cá buscar 3 vezes... portanto aquilo que nós vamos dizer é que, uma instituição que se esquece de vir cá buscar, é porque não precisa... portanto tendo nós 180 em lista de espera, se calhar vamos buscar outras instituições...estes processos neste momento estão em vigor, a trabalhar e assim continuamos...

- **During difficult times like the one we are still living, there is always room for improvement. Which were the main opportunities for learning/improvement that you found during this period? What were the lessons taken from these two last years?**

Uma das coisas mais incríveis foi o boom de voluntários que nós tivemos, as pessoas a quererem ajudar. Para nós é muito importante que as pessoas saibam o que é que nós fazemos aqui dentro, pois quando vim para aqui ainda existia muito o estigma “ahhh, eles enchem os carros deles e eles ajudam A, B, e C”... e portanto, as pessoas vêm para aqui e têm conhecimento do que fazemos... para nós é importante... depois outra coisa, foi o número de particulares e empresas que ajudaram...

4) Improvement opportunities for the future

- **What is currently missing in the logistical processes of the organization, so that it is possible to have a quicker response to the needy families? If there was one thing you could fix in the current system to address food insecurity, what would that be?**

Em termos internos de BA, passava a utilizar mais tecnologia do que a que temos hoje...isto era fundamental para nós e estamos a caminhar para isso... e eu quero que, um dia que me vá embora, gostava que o BA ficasse com a tecnologia que deve ter...pikcing e contadores lá fora por aí fora...sabemos que somos uma IPSS e não podemos investir como uma empresa, mas quero deixar isto tudo mais automatizado... em termos de logística, falando de BA, cruz vermelha, caritas que às vezes também fazem isto, nós neste momento estamos a caminhar para uma situação que é...o programa europeu de apoio a pessoas mais carenciadas dá alimentos às pessoas e as pessoas vão buscar à instituição A, B, C e D. E achou-se na comunidade europeia que é muito chato

pôr as pessoas numa fila à porta de uma instituição porque parece um ato discriminatório... e então aquilo que se quer fazer é, dar um cartão de MB à família com um plafond em que a família vai a um supermercado, só pode comprar 10 ou 20 produtos, por exemplo... não pode comprar alcool, tabaco, chocolates... só vai ter acesso à conta e a família vai ao supermercado, compra e paga com aquele cartão que tem aquele plafond... gasta aquilo e não pode gastar mais...isso é uma das formas de utilizar... para nós BA, era muito bom que não existisse BA, que era significado que não havia necessidades... em termos logísticos, uma das coisas que nós também pensamos é aproximar os BA das famílias e aqui era criar por exemplo, lojas sociais... ou seja, nós temos 18 concelhos no distrito do Porto e cada concelho devia ter uma loja social e assim era escusado que a instituição de Amarante por exemplo viesse todos os meses ao Porto buscar produtos... aqui teríamos de ter uma logística muito grande, vamos imaginar que eu tenho, uma plataforma logística do Pingo Doce e a partir daqui saem todos os dias camiões para os supermercados...e aqui teria que ter um armazém como o BA e todos os dias saem 18 camiões para as lojas sociais... isto tudo é um investimento muito grande...as lojas sociais seriam geridas por voluntários...espaços doados pelas câmaras municipais, e eventualmente transportes feitos pelas câmaras municipais... isto é uma das ideias em termos logísticos...agora, não sei... conforme está montado, acho que está bem montado..., mas talvez os cartões seja o futuro.

- In your opinion, how could government, academics and private or public companies be connected together successfully, in order to help to develop a more efficient food distribution network?

Em termos de comunidade europeia que nos ajuda, portanto a comunidade europeia paga aos fornecedores e os fornecedores entregam-nos os produtos aqui no BA, o BA entrega às instituições e as instituições entregam às famílias... isto tudo é gerido em Portugal pela Segurança Social, em termos de poder europeu... há aqui muita coisa que podia ser muito melhorada, porque nós temos a comunidade europeia a fazer um cabaz sentados em Bruxelas para uma família necessitada em Portugal... e agora eu pergunto-lhe, a Rosa em casa tem um frigorífico em que tem um congelador com 3 gavetas? Não consegue pôr lá grandes quantidades...põe, sim, aquilo que compra semanalmente...ou mensalmente... e agora, eu pergunto como é que uma família necessitada e que se calhar não tem um frigorífico como o seu... consegue guardar todos os meses 10kg de carne, 10 kg de peixe, 5kg de vegetais, 5kg de bróculos...todos os meses? Isto é uma queixa que

nós temos das famílias e das instituições... portanto isto não é pensado... pois claro, chega a casa da família, vou entregar à minha mãe, à minha irmã, ao cunhado... não há outra hipótese... ou então vou comprar uma máquina congeladora, mas eu não tenho dinheiro para isso... portanto, isto é feito por pessoas que não têm conhecimento do terreno, e eu estou convencido que isto acontece em Portugal, em Espanha, França, etc...em todos os países da comunidade Europeia. E depois, isto é uma opinião pessoal... que é não tem muito a ver com o BA, mas sim com instituições, que é... eu posso-lhe dizer que aqui em V.N.Famalicão num raio de 5km, eu sou capaz de ter 10 lar de idosos e esses 10 lares de idosos são todos financiados pelo Estado...porque é que eu não tenho 1 lar de idosos, em que eu tenho 1 cozinha central, onde eu vou aboserver até os colaboradores dos outros sítios e portanto vamos unificar aqui tudo, porque ao ter um, não preciso de ter 5 cozinhas, eu tenho 1 cozinha, 10 carrinhas, eu tenho 2 carrinhas...portanto, vou centralizar as coisas...e tenho 1 lar de idosos e o Estado apoia 1 lar de idosos, estou a pagar eletricidade/água de 1 sítio e não de 5... e o mesmo acontece com escolas...

4th Interview

1) Career experience

- **What is your current position in the Porto Food Bank? What are your main functions and responsibilities?**

Estou na área da logística e distribuição, sou responsável também pelo programa de apoio às pessoas mais carenciadas, um programa que é financiado pela EU e uma parte mais reduzida pelo Estado Português, e também gestão de stocks que é feito pela minha equipa e também pelas pessoas que estão no armazém.

- **What is your background? Do you have any background in logistics in terms of professional experience or academic specialization? Have you already worked in this field in other companies/contexts?**

Sim, numa residência universitária. Gestão da residência.

- **How long have you been in the organization?**

Desde Março de 2020.

- **Are you organized in teams? In which team are you inserted?**

A minha equipa é logística e distribuição, gestão do armazém. Sou eu e mais uma colega que estamos nesta área.

2) Organization structure and current processes

- **Where do leadership guidelines come from to your team? Does your team act independently or is dependent on other teams' decisions?**

Um pouco das 2 coisas, também temos uma reunião semanal com os outros departamentos, depois dependendo dos assuntos reunimos com a área social...que gere as relações com as instituições que nós apoiamos... depois também temos relacionamento com a parte da angariação que normalmente são voluntários que fazem a angariação de produtos ou de donativos para o banco e querem saber da nossa parte o que é que precisamos mais num determinado momento...que produtos é que estão em falta..isto é coordenado por um coordenador que está aqui no BA que faz a ligação com a direção do BA. No fundo, tudo reporta depois à direção do BA que no fim é quem decide aquilo que é importante e aquelas decisões mais importantes... e está a par das coisas que nós vamos fazendo... portanto, nós reportamos consoante os assuntos ou diretamente à direção ou através do coordenador que há no BA. Depois, no programa operacional POPAMC, aí eu reporto diretamente à direção. É da minha responsabilidade, embora não trabalhe sozinho...

- **How is the relationship of mutual assistance between food banks in Portugal as they help each other in terms of resources? How is the lack of resources managed? (example: lack of food products on one side (one region) and excess on the other side (another region))**

Sim, por exemplo quando nós recebemos uma doação de um produto... ou que sabemos que faz falta em algum outro banco ou porque nós não conseguimos em tempo útil distribuir, contactamos os outros bancos normalmente aqui na zona Norte ou Centro e oferecemos aquilo que podemos e os outros bancos fazem o mesmo... depois também recebemos às vezes doações pelo mesmo motivo do banco de Lisboa, e também pela federação que tem de uma certa maneira, uma capacidade de angariação nacional e depois canaliza localmente para cada banco. É assim, quando temos excesso ou produtos com o prazo de validade por exemplo e a quantidade não conseguimos distribuir em tempo útil, nós oferecemos a outros bancos.

- Is that management done by your team?

Sim, e com a direção também.

- Could you please precisely describe the full process since the products are donated to the organization until it is delivered to the beneficiaries?

Quando os produtos são doados, das duas, uma, primeiro, ou vêm cá entregar ou pedem para irmos levantar, nós próprios ou então contactando algum transporte/Transportadora...depois uma vez recebidos aqui no armazém, são registados dando entrada, entram no nosso stock... e são depois, consante o tipo de produto/validade, são distruibuídos pelas instituições que apoiamos. Há 2 tipos de produtos que nós separamos, portanto, os secos e os frescos... os produtos frescos são de distribuição para os dias seguintes, entram e no dia seguinte são logo distruibuídos em função de um calendário de instituições que vêm cá... e os produtos secos também de acordo com a validade, que é normalmente maior, são depois distruibuídos em cabaz ao longo dos meses seguintes, dependendo da validade obviamente...Normalmente não fazemos entregas nas instituições, são as instituições que vêm cá buscar...pontualmente, em algum caso excecional, entregamos nas instituições também.

- The food products are donated to the institutions that in turn, deliver to the beneficiaries? How do these institutions ask you for help?

Sim, esse é o processo normal... nós não costumamos receber pedidos de ajuda diretamente, ou melhor, não é verdade, nós costumamos receber, mas, não é significativo para o número de pessoas que apoiamos. Principalmente durante a pandemia, esse número aumentou bastante de pedidos directos ao BA, mas tirando casos muito excecionais, o que fazemos é canalizar as pessoas para as instituições que nós apoiamos no lugar de residência dessa pessoa que está a pedir ajuda. E portanto, essa pessoa é depois conhecida pela instituição e integrada no número de beneficiários de cada instituição, integrada ou não, portanto do fruto do conhecimento que têm dela... mas realmente nós, para o número de pessoas que apoiamos, o número de pedidos ainda que tenha aumentado, é pouco significativo... o número de pedidos por ano antes da pandemia, passou a ser por vezes o número de pedidos diários em alguns casos, durante a pandemia... e portanto foi preciso destacar alguns de nós, na área sobretudo do serviço social para atender estes pedidos durante todo o dia...Maio, Abril de 2020.

- Who is responsible for defining the quantities of goods donated to each beneficiary institution? Has the way of allocating the goods to each institution changed during/after COVID-19?

Certo, que é em função de várias coisas, em coisas absolutas é os produtos que temos para distribuir, a quantidade de cada produto, depois o número de pessoas que a instituição apoia. Estes são os critérios, às vezes não é possível porque há menos produto, não dá para todos nas quantidades que gostaríamos...ou às vezes também por limitações dos softwares por exemplo, é uma das dificuldades que temos neste momento sermos capazes de forma expedita de adequar aquilo que temos para dar à dimensão do apoio que as instituições dão...de grosso modo fazemos, mas há vezes que ficamos bastante à quem disso. Portanto, sendo que uma instituição, que por exemplo, vamos pôr assim um número que apoia 300 pessoas e outra que apoie 30, há um tecto... nós apoiamos, vamos supor, 100 pessoas, se na instituição tem 300, há um tecto de 100 pessoas por exemplo, porque temos de distribuir também para as instituições pequenas, senão as grandes levariam tudo...fazemos uma gestão deste tipo...

- Which software do you use to do the stock management in the organization?

Excel e software daqui que é o Sendys...é uma empresa nacional

- Are the donations to the bank always done as food products? Or are there monetary donations? What type of donation do you prefer and why? In case of monetary donations only serve to buy food products?

Não temos preferência, costuma-se dizer que quem é pobre, não escolhe...mas, basicamente já sabe que quando nos dão alimentos é para distribuir e quando são doações em numerário, o banco tem os seus custos de funcionamento, de ordenados, eletricidade... temos máquinas que dependem muita energia... a arca congeladora...tudo isso é preciso pagar e como nós não geramos dinheiro, nem rendimentos, logo tudo o que se faz há custos... não sei se há, poderia dizer que há preferências, obviamente satisfazendo os custos do BA, tudo o que podermos e é essa a nossa missão, são os alimentos... é isso que nos traz aqui...mas depois precisamos de uma estrutura que nos suporte a nossa missão e essa estrutura tem custos e portanto, os donativos são também necessários... diria que um está a favor da missão, os donativos quer um, quer de outro são necessários... também às vezes recebemos doações de empresas em dinheiro mas com destino para comprar alimentos...e respeitamos

isso...muitas vezes até sugerimos para fazer diretamente a compra e até sugerimos alguns fornecedores que sabendo que é para nós, podem fazer um preço mais razoável/amigável... outras vezes, de facto, pediram-nos que fossemos nós a comprar e pronto nós fazemos a compra naquela quantidade e damos conta disso... Quando não, é para os custos do banco.

- In case the monetary donations are used to buy food products, is your team that is responsible and accountable for that?

Não, tudo vai à direção sim...nós temos alguma autonomia nas decisões e propomos comprar ou que a angariação peça que consiga este produto que está em falta por exemplo... na altura da Páscoa, por exemplo...isso de certa maneira parte de nós, sempre de acordo com a direção e articulando depois com quem for, angariação, serviço social...

- How do you deal with food waste in the food bank operations?

Nós lidamos muitas vezes com o desperdício alimentar... muitas vezes aquilo que temos, não segue... às vezes sobretudo na parte dos frescos e não só... nós recebemos o desperdício de outros...isto é, para não ir para fora/lixo, vem para aqui...desde que tenha prazo de validade, nós podemos aceitar...por exemplo quando temos grandes quantidades de melão, nós tentamos distribuir ao máximo, mas quando vemos que está num estado de maturação que já não vai dar muito tempo para distribuir, chamamos instituições para além daquilo que está calendariizado para ver se escoamos e não temos de deitar fora... nem sempre conseguimos fazer isso porque realmente, nós não controlamos totalmente o estado de maturação dos produtos que nos oferecem... quando prevemos que a coisa não está bem, não aceitamos sequer... nós lutamos contra o desperdício, mas não somos um caixote do lixo. Nós tentamos que não nos ofereçam coisas que não vão servir... por isso, há outras formas de fazer e não passa por nós... mas aquilo que é aproveitável, sim, nós recebemos e tentamos distribuir, tendo em conta o estado de maturação, a validade dos produtos...

- How does stock management works? Is there a concept of minimum stock (minimum amount to meet the demand needs)

Nós fazemos mensalmente o inventário...e portanto, temos uma fotografia daquilo que temos em stock e depois temos também, em alguns casos, previsão de

doações nos meses seguintes e sabendo depois a quem vamos distribuir nesses meses, podemos tentar pedir à equipa da angariação que reforce um pedido de algum produto específico que possa vir a faltar ou por conveniência, seria interessante, podíamos oferecer e distribuir... portanto, isso é feito mensalmente e depois é acompanhado ao longo do mês... mensalmente tiramos uma “fotografia” do stock e vamos acompanhando, vendo o que entra e o que sai...o que podemos mandar porque temos stock suficiente, para quantos meses temos..., se é preciso passar 1 ou 2 meses ou já nesse mês reforçar o pedido de algum produto...isto na parte dos secos... na parte dos frescos, aí não há “Gestão” no sentido de angariação...por exemplo, gostaríamos de ter mais melões... não fazemos isso... aí aceitamos o que está disponível...

- How does volunteer management works? If there are unexpected casualties in the group of volunteers, what is the process to fill that gap?

Quem lida mais com essa questão, são as minhas colegas da área social...embora em articulação um bocadinho com aquilo que é necessário fazer... somos nós aqui na distribuição que planemos os cabazes para o mês seguinte... mas depois os cabazes, para além de algum colaborador que trabalha aí, aqui do BA, é feito basicamente pelos voluntários... e depois, vamos comunicando se há algum voluntário que é responsável pela gestão dos voluntários em articulação com o serviço social...a gestão do dia a dia dos voluntários, é uma equipa de voluntários que faz... depois em função das necessidades do banco para aquela semana, por exemplo, esta semana estamos a fazer cabazes e essa equipa de voluntários tenta sensibilizar os voluntários que estão numa bolsa de voluntariado, lança o aviso que é preciso fazer turnos nessa semana para cabazes...ou para a distribuição... nós apresentamos as necessidades e eles gerem isso... o serviço social é responsável pela 1ª entrevista com o voluntário, o 1º contacto é feito com eles e depois a gestão do dia a dia das necessidades, é feita com a distribuição, mas com esta equipa de voluntários que referi.

3) Challenges and difficulties faced during COVID-19

- In your opinion, what were the main challenges faced by the organization during the emergence of COVID-19?

O que mudou, foi, nós mudamos algumas rotinas... nós temos em media 20 a 25 insituições por dia que nos visitam para levantar alimentos, tivemos que fazer um horário para cada dia um pouco mais espaçado, tentar não acumular muitas insituições, mudamos

os circuitos no armazém de entradas das insituições para recolher os alimentos, entrada e saída para que não se cruzassem...antes era tipo feira, entravam todos... agora não...houve altura em que era só 1 instituição dentro do armazém, depois quando abrandou eram 2... e isso ainda se mantém, há um condicionamento da circulação das insituições no armazém...depois tentamos que não ficassem todas ali à entrada do portão...mas sim que ficassem junto do carro e que aguardassem a sua vez junto do carro e que viessem naquela hora e não depois para não acumular com outras... portanto, a nível de circulação e de rotinas, tivemos de mudar...obviamente, uma das limitações que tivemos grande, foi não podermos fazer as 2 campanhas de supermercado cada ano... e isso durante 2 anos e portanto isso significou também um reforço da equipa de angariação...portanto, já que não conseguíamos através das pessoas uma a uma nos supermercados, que houvesse instituições, empresas, produtores que oferecessem ... e de facto, conseguimos, foi um esforço muito grande destas empresas e da nossa equipa de angariação... que conseguiu de certa maneira, colmatar essa ausência...isto na angariação, que foi reforçada... nas campanhas, houve mais sensibilização para campanhas mais pequenas, as compras online... tivemos que diversificar um bocadinho no tipo de angariação, já que não tínhamos aquilo que habitualmente antes alimentava o armazém do BA que eram as campanhas... basicamente cada campanha, alimenta ou é suposto alimentar com mais ou menos algum donativo extra, os 6 meses seguintes até à campanha seguinte... não havendo, tivemos que adaptar...

- Did these challenges/difficulties change the way the organization operates/works? If yes, how?

Sim, houve coisas que fizemos diferente e mais organizadamente e isso significa que é uma coisa boa... não quer dizer que antes não fosse bom, mas pronto é mais ordenado assim, e mais organizado...penso que sim.

- On the level of stock management, did you need to change something during COVID-19? Or the processes maintained generally the same?

Nesse aspecto não...claro que ao ser oferecido em quantidades grandes, tivemos de facto grandes donativos de alguns doadores... e isso de certa forma dava uma certa homenegeidade àquilo que nos era doado... imagine, num supermercado quando há campanha, há sempre o trabalho de separar os produtos por categoria... isso é um trabalho posterior àqueles dias da campanha...ainda agora estamos a fazer frente à campanha de

dezembro... mas além disso, claro que não tendo essa forma de doação, nós recebemos muitas quantidades do mesmo produtor comprado por vários doadores e isso dá uma homogeneidade de produto, de embalagem, de paletes...que para nós, de certa maneira simplificou um pouco alguns processos, como o processo de registo...não tínhamos de estar a separar as famílias de produtos... isso facilitou um pouco e obviamente a arrumação aqui em armazém também...ao vir dum produtor já tudo organizado, separado por produtos... não tínhamos que fazer isso, era só pesar, identificar o produto, quantas unidades...simplificou o processo...

- **During difficult times like the one we are still living, there is always room for improvement. Which were the main opportunities for learning/improvement that you found during this period? What were the lessons taken from these two last years?**

A parte de organização e a parte de capacidade que tivemos de angariação, obviamente num contexto de pandemia, em que muita gente, também as empresas estavam sensibilizadas... não sei se seríamos capazes de angariar tudo o que conseguimos angariar num contexto normal... num contexto de pandemia, em que as pessoas sabiam que estavam muitas pessoas necessitadas, que não havia a campanha do BA tradicional...e quiserem corresponder, e de facto conseguimos algo milagroso... mas, graças à boa vontade de muita gente e generosidade de muita gente e de empresas individuais...

4) Improvement opportunities for the future

- **What is currently missing in the logistical processes of the organization, so that it is possible to have a quicker response to the needy families? If there was one thing you could fix in the current system to address food insecurity, what would that be?**

Eu gostaria muito de adequar os nossos processos à escala que o BA tem atualmente e não digo só este ano... o BA certamente não teve a dimensão desde o início que tem atualmente... e, claro que não tenho histórico estando há pouco tempo aqui na casa, mas diria que o BA do Porto é um banco de média-grande dimensão à escala nacional, sendo o 2º maior BA...e, como vê, entra muito alimento, muitos produtos em grandes quantidades e os meios que existem atualmente, quer técnicos quer em termos de equipamentos, tecnologia...pode não ter acompanhado este crescimento...e acho que nós

estamos numa fase de transição em que provalmente vamos precisar de algum investimento que tem vindo a ser feito... o ano passado recebemos uma doação de uma arca congeladora onde cabem 80 paletes... antes tínhamos uma arca congeladora onde estavam cerca de 18 paletes... pronto, a parte de gestão de stocks, de registo, de dar saída e entrada ainda não cresceu, não se desenvolveu... eu acho que aí, pode ser um caminho que nós temos de crescer...temos que acompanhar o crescimento do banco, da atividade, daquilo que recebemos, do numero de instituições que apoiamos...

- **In your opinion, how could government, academics and private or public companies be connected together successfully, in order to help to develop a more efficient food distribution network?**

Nós não somos um parceiro isolado... há outros parceiros como o BA, não somos os únicos que fazemos isso e todas as instituições que nós apoiamos, fazem algo que nós fazemos... nós no fundo potenciamos a missão deles, nós apoiamos instituições que por sua vez apoiam diretamente os beneficiários finais... eu penso que, obviamente a parte de donativos quer a nível dos BA, o BA do Porto e as instituições que nós apoiamos, quer em espécie ou em dinheiro... isso é importante... assim de repente, não lhe sei dizer... mas obviamente financiamento...quer para compra de alimentos, quer para suporte das despesas...certamente a entrada das instituições poderia ser facilitada, a carga burocrática que por vezes é penosa...que nós temos que tratar... ou então, o número de instituições que nós podemos apoiar está relacionado com a área de armazém que temos e também o número de colaboradores... portanto há um limite, nós não podemos passar... para as nossas atuais instalações, não podemos passar das 300 instituições que apoiamos... ora, nós podemos apoiar mais instituições, mesmo com a nossa área e com os nossos colaboradores... e é uma pena que não o façamos porque há este limite legal, nós temos mais instituições a pedir, mas não podemos aceitar todas... e aí se calhar podia haver um estudo mais no concreto datado aos dias que correm de quantas instituições nós podíamos apoiar por exemplo...podemos apoiar mais, em vez de termos um stock aqui parado, circulava mais...teríamos de alterar os nossos processos também... mas podia haver uma maior circulação... acho que é verem-nos como parceiros, como parceiros maduros e não como crianças, sim, sem dúvida que é preciso fiscalizar, mas ao mesmo tempo ver que somos parceiros e que não somos servos nem escravos do governo ou das câmaras e estamos com eles também interessados em resolver os problemas... e não basta fiscalizar, é importante, mas portanto é preciso tratar-nos como parceiros...

5th Interview

1) Career experience

- **What is your current position in the Porto Food Bank? What are your main functions and responsibilities?**

Sou funcionária do BA do Porto há cerca de 19 anos...onde eu estou mais inserida é na parte da distribuição, embora se necessário fazer outros trabalhos, também o faço...também devido à antiguidade que eu tenho aqui...já sei um pouco de tudo, mas a minha área é de distribuição. Eu trabalho em conjunto com outro colega... trabalhamos os 2 juntos, embora eu esteja mais responsável por uns trabalhos e ele por outros, mas temos conhecimento de tudo o que o outro faz...pronto, e trabalho em equipa com ele, embora também trabalhe com o serviço social, pois é de lá que vem todas as informações das instituições...e, como faço a distribuição dos produtos, preciso muito das informações das instituições e essa é a parte do serviço social. Em termos de funções, podemos começar pela distribuição de produtos frescos que é feito diariamente, todos os produtos que chegam cá, têm que dar entrada no nosso stock, temos que gerir as datas de validade e todos os dias há essa distribuição pelas instituições que estão marcadas em calendário... Existe também um calendário que sou eu que o faço para, naquele dia sabermos que vêm aquelas instituições... e então podemos distribuir esses produtos que têm um grau de maturidade ou uma validade muito reduzida e pronto, faço essa distribuição diária. E depois temos a distribuição dos produtos secos, que são os cabazes que as instituições levam todos os meses...1 vez por mês, vêm cá e levam produtos secos... nesse sentido, funciona um bocadinho diferente, porque normalmente, os produtos secos têm mais prazo de validade para se poder distribuir... o que é que acontece? Todos os meses, a partir do dia 20 de cada mês, há um inventário no armazém para apurarmos diferenças, para apurarmos o stock que temos de cada produto... feito isso, eu faço uma proposta de cabaz, com os produtos que temos... se sabemos que eventualmente já está certo chegar ou não um produto..., pois nós temos dádivas mensais... não temos assim muitas empresas certas, mas temos 3 ou 4 por exemplo que nos dão mensalmente e sabemos que todos os meses vamos receber aquilo... e pronto é feita essa proposta e é revista também pelos outros colegas do serviço social e depois é apresentada à direção... a direção é que vai decidir se vamos dar aquelas quantidades ou não.

- What is your background? Do you have any background in logistics in terms of professional experience or academic specialization? Have you already worked in this field in other companies/contexts?

Tenho o 12º ano na área de informática. Eu costumo dizer que o meu único trabalho a sério foi no BA.

- Are you organized in teams? In which team are you inserted?

Estamos distribuídos por 6 equipas: na distribuição temos 2 pessoas; no serviço social, temos outras 2 pessoas; no armazém são 7 funcionários e no secretariado/administrativo, temos 1 funcionária. E por fim, o grupo de Voluntários.

2) Organization structure and current processes

- Where do leadership guidelines come from to your team? Does your team act independently or is dependent on other teams' decisions?

Giro em conjunto com o meu colega, mas também comunicamos com as outras equipas, sendo que a aprovação final é sempre com a direção.

- How is the relationship of mutual assistance between food banks in Portugal as they help each other in terms of resources? How is the lack of resources managed? (example: lack of food products on one side (one region) and excess on the other side (another region))

Em termos de próprio trabalho do BA, isso não aconteceu durante a COVID-19... agora nós temos outra estrutura que os outros bancos não têm por serem mais pequenos... por exemplo a nível de produtos, nós sempre que podemos ajudamos os outros bancos... sabemos que eles não têm tantos recursos como nós temos... por exemplo, se vem uma carga muito grande com cerca de 30 paletes de pêras, fazemos sempre a ligação para outros bancos a ver se necessitam...

- Did the opposite already happened? Due to the dimension of the food bank?

Sim... o contrário também já aconteceu, mas é mais raro.

- **Could you please precisely describe the full process since the products are donated to the organization until it is delivered to the beneficiaries?**

O produto chega, e das duas, uma, primeiro, ou vamos nós buscar ou o próprio doador entrega cá... o produto entra, é pesado, se for necessário é feito uma triagem, no caso dos produtos frescos (Frutas e legumes)... entra no nosso stock, é armazenado no frigorífico conforme o produto que for.... É armazenado e depois vai para distribuição... no caso dos produtos frescos, se for para sair logo no dia a seguir, vai logo para a distribuição no dia a seguir, faz-se a distribuição e depois segue para as instituições... e depois nas instituições, que como sabe, há as beneficiárias e as mediadoras...claro que depois temos aqui, tipo uma seleção dos produtos que podem ir para as famílias ou não...pois temos esse feedback do serviço social com as reuniões que eles têm com as instituições e nem todos os produtos são viáveis para eles levarem...o nosso objectivo final é que realmente chegue à boca de quem precisa mesmo... Assim, os produtos secos saem em cabazes 1 mês por mês e diariamente saem produtos frescos para as instituições.

- **Who is responsible for defining the quantities of goods donated to each beneficiary institution? Has the way of allocating the goods to each institution changed during/after COVID-19?**

Nós com a pandemia tivemos 2 anos sem fazer campanhas em supermercados... o grosso do BA são as campanhas de recolha de alimentos... então tivemos de reinventar...tivemos de nos mexer, este conhece aquele... tivemos de procurar e ir atrás das pessoas... houve donativos, quem não quisesse dar em alimentos poderia dar dinheiro para essa compra... nós o ano passado, tivemos uma quantia que com acordo da direção, tivemos de comprar alimentos porque senão não tínhamos...e foi assim que fomos gerindo, fazendo novas campanhas, mas não a campanha de recolha de saco... recolhemos nas igrejas, escuteiros... tivemos de meter os pés a caminho e tivemos de readaptar esta situação para recebermos os produtos porque senão não conseguiríamos ter... e depois é assim, eu acho que, na minha opinião, quando estamos mal, ou quando acontece alguma coisa, as pessoas são mais solidárias... que acabem sempre por dar mais do que aquilo que podem...e então foi isso que nos aconteceu, tivemos de nos reinventar, mesmo aqui em termos de trabalho, tivemos de ir para teletrabalho... tivemos mesmo que trabalhar e tentar levar o nosso objectivo adiante... claro que algumas campanhas, como

a rede de emergência alimentar através da federação, tivemos essa ajuda... mas pronto tivemos que ir buscar outras formas de angariar produtos...

- And when you found new ways of fundraising, was there a specific team responsible for that?

É assim, claro que há sempre uma equipa responsável por aquela situação, não é? Embora todos os outros ajudem naquilo que podem, mas pronto, nós temos uma equipa de angariação que é de voluntários... e depois também tivemos o serviço social que é quem organiza as campanhas dos supermercados 2 vezes no ano ... mas toda a gente ajudou, mesmo quando chegavam os produtos, ao sábado abríamos para receber esses produtos pois havia pessoas durante a semana que não o conseguiam vir cá entregar e então nós abríamos aos sábados para vir cá entregar os produtos... e pronto todos ajudávamos... Empresas que já costumavam dar, continuaram a dar e outras novas empresas surgiram para doar...

- But, did the products allocation to each institution changed?

Nós tivemos que dar mais apoio às instituições...e apoio como? Por exemplo havia instituições que não tinham mesmo condições para vir cá buscar os alimentos... ou porque o motorista estava com COVID ou porque estavam com redução de funcionários... e pronto, então a direção entendeu que devia ajudar e nós tivemos que ir levar alguns produtos a algumas instituições que não tinham capacidade para vir cá buscar... e depois também tivemos muitas instituições que estavam fechadas, como os ATL's, as creches também tiveram muito tempo fechadas...mas aquelas que conseguiam estar abertas, como os lares, os centros de infância e juventude, que tem utentes internos que não podiam fechar...sendo que os utentes moravam lá...não podem fechar... em circunstâncias em que eles realmente não podiam vir, nós ajudavamos nesse sentido...

- In general, did you felt a change in the requests for help on the behalf of the institutions?

Principalemente nos pedidos de ajuda individual que automaticamente nesses pedidos, o serviço social encaminha para a instituição em caso, e claro as instituições ficam com mais utentes, e nós temos de reforçar mais os cabazes.

- Are the donations to the bank always done as food products? Or are there monetary donations? What type of donation do you prefer and why? In case of monetary donations only serve to buy food products?

É assim, nós precisamos muito dos alimentos, mas para gerir uma organização destas e para fazer tudo o que fazemos, também precisamos de donativos em dinheiro porque é assim, há uma factura de luz, água, despesas com os carros, gásóleo, funcionaários... nós temos muitos voluntários que nos ajudam muito, mas isto sem funcionários, não funcionava...para o funcionário, isto é uma obrigação, estar aqui durante aquelas horas... o voluntário, não, o voluntário é aquele que dá o tempo que pode... e da forma como isto está montado e a organização em si precisa mesmo de funcionários... há muitas despesas mensais que são fixas, seguros e claro que precisamos do dinheiro... e que se não entrar dinheiro de lado nenhum, é complicado...

- How do you deal with food waste in the food bank operations?

Por norma nós não aceitamos produtos fora de prazo para não haver esse tal desperdício... agora, há exceções...se a empresa disser que nos passa uma declaração em que o produto está conforme, nós aceitamos e ao entregar esse produto à instituição, nós entregamos também essa declaração que a empresa nos passou para garantir que o produto está conforme e até para nos livrar de quaisquer responsabilidade... nós aqui tentamos, principalmente nos produtos frescos, tentamos fazer a melhor triagem possível... exemplo da caixa de tomates... por isso é que os produtos mais perecíveis entram e saem logo...

- How does stock management works? Is there a concept of minimum stock (minimum amount to meet the demand needs)

Estamos a pensar implementar um sistema de picking, mas claro que isso é mais um custo... mas para já não temos... temos um program que é o Sendys, que ao dar entrada no stock gera um lote....e depois damos saída também por esses lotes...e pronto, a gestão de stocks é mesmo feita nesse sistema, embora depois o sistema, os mapas de stocks dá tudo para exportar para excel para podermos fazer contas...mas o nosso programa aqui de gestão de stocks é o Sendys.

- How do you manage the minimum stock of a product?

Os produtos secos têm de ser geridos durante 6 meses... que é quando depois vamos ter outra campanha, sendo que temos 2 campanhas anuais de 6 em 6 meses, uma em maio e outra em dezembro e temos que gerir durante 6 meses...embora saibamos que depois vem a campanha vale, são aquelas campanhas vale dos supermercados que vêm posteriormente... sabemos também que por exemplo chegou um carregamento de bolachas, podemos se calhar dar mais um bocadinho de bolachas no cabaz de abril...vamos gerindo conforme o produto que nos chega e que sabemos que vai chegar... no fundo, fazemos para que o stock dure até ao final dos 6 meses até ter nova campanha... se o stock de um produto chegar a zero, não esperamos pela campanha seguinte, mas tentamos sempre arranjar forma de angariar esse produto, falamos com a angariação e eles com as empresas que têm contacto, tentamos arranjar...

- Did this changed in any way during the pandemic period of COVID-19?

Não... manteve-se, até porque tivemos quase sempre o mesmo nível de produtos, mesmo não tendo as campanhas, houve outras iniciativas de angariação e então tentamos manter sempre todos os meses... nunca houve um mês em que faltasse produtos. Isso nunca aconteceu...mas, claro que nos produtos frescos diminuíram um pouco, as empresas estavam fechadas e nós deixamos de ir ao mercado abastecedor do Porto que costumávamos ir duas vezes por semana... mas ali nós temos muito contacto com os doadores e então, a direção achou por bem, não expor os funcionários a esta situação... neste momento, já voltamos... em termos de distribuição, as coisas nunca pararam...

- How does volunteer management works? If there are unexpected casualties in the group of volunteers, what is the process to fill that gap?

Eu não tenho muita experiência na gestão de voluntários, mas sei que o voluntário manda e-mail ou telefona, tem um 1º contacto com o serviço social, depois é marcado uma entrevista e depois conforme as nossas necessidades, é marcado no grupo de voluntários... essa parte também tivemos de reinventar essa situação porque não podíamos ter aqui as pessoas todas as mesmo tempo... e então tivemos de criar um grupo para saber quais são as tarefas que vão haver na próxima semana, e saber quantas pessoas são precisas, e as disponibilidades das pessoas...este grupo foi criado durante a COVID-19.

- How did it work the telework in your organization?

Tivemos um tempo que realmente a direção achou bem todos aqueles que pudessem ficar em casa, que o fizessem... se não fazíamos espelho...até porque há trabalhos que são impossíveis de fazer de casa... o trabalho de armazém por exemplo... eu com o meu colega, ele vinha uma semana e eu vinha outra. Tivemos de nos reinventar, foram tempos difíceis, mas tudo se fez, com mais ou menos atraso...a minha área de trabalho mexe muito com o papel, o processo do produto desde que entra até que sai... documentos para os doadores... isso é tudo papel, embora esteja no computador, eu tinha de vir cá ao BA para tratar desses assuntos...

3) Challenges and difficulties faced during COVID-19

- In your opinion, what were the main challenges faced by the organization during the emergence of COVID-19?

Na angariação de produtos, sem dúvida, embora que tivemos um bom resultado, mas tivemos que trabalhar nesse sentido... depois houve aqui um tempo que vários colegas tiveram com COVID... por exemplo, eu era a única no escritório que podia vir, porque estava em teletrabalho e sabia que não tinha o vírus e podia vir...no armazém, enquanto não houvesse um teste negativo, os trabalhadores não podiam vir trabalhar... e então houve um tempo em que o meu trabalho foi no armazém em conjunto com outro colega. Aliás, tivemos que cancelar as instituições pois não tínhamos capacidade... tivemos 2 ou 3 semanas um pouco atribuladas...

- Did these challenges/difficulties change the way the organization operates/works? If yes, how?

Sim, a gestão de voluntários por exemplo...também não queremos ter aqui pessoas a quem não podemos atribuir tarefas...uma melhor organização de voluntários. Acabamos por ter também uma melhor gestão de produtos, principalmente nos produtos frescos como tivemos uma redução, conseguimos manter a distribuição equitativa... tivemos de novo também o grupo da triagem, sempre que vem algum produto, também foi implementado na pandemia... Antes também fazíamos, mas não com o mesmo rigor de agora, agora criamos mesmo um grupo de triagem que se responsabiliza por essa parte...

- When the food banks were hindered to do the supermarkets campaigns, you have started to contact companies in various sectors... is this contact still being made to these companies? Or for example, have these companies continued to give now that things are calmer?

Sim... mantivemos o contacto com as empresas e elas continuam a doar-nos produtos.

- Which were the main logistical processes that needed to change during the COVID-19 pandemic? Was there any process that radically changed?

Radicalmente não... os cabazes são feitos da mesma forma, a distribuição do PO também é feito da mesma forma... também não há outra forma para o fazer, é sempre da mesma forma, embora possamos melhorar um ponto ou outro..., mas a logística é a mesma.

- During difficult times like the one we are still living, there is always room for improvement. Which were the main opportunities for learning/improvement that you found during this period? What were the lessons taken from these two last years?

Nós com a diminuição de produtos, tivemos que ser um bocadinho mais rigorosos com as instituições... mais rigorosos, em que sentido? O que nós queríamos, o nosso objectivo era que o pouco que conseguíssemos angariar, conseguir que chegasse à mão das pessoas que necessitam e para isso é preciso toda uma gestão de processos de família... porque é assim, há pessoas que só porque acham que estão em casa desempregadas, se calhar têm direito a receber... não é bem assim.. nós temos que ser mais rigorosos... uma pessoa que venha pedir ajuda ao BA e que tem luxos, será que necessita mesmo? Tivemos que ser mais rigorosos neste aspecto, porque é assim, cada vez há mais pessoas a pedir, cada vez mais há instituições a precisar de apoio e nós temos que realmente ser o mais justos que possamos ser... claro que essa parte é feita pelas instituições, mas as instituições, todos os anos vêm cá, têm que mostrar os processos das famílias, têm que preencher um formulario que é o per capita para saber quanto é que a pessoa tem por dia para se sustentar... houve outra situação no serviço social que propôs à direcção e a direcção concordou e depois enviou essa informação às instituições... que as instituições que dão apoio a famílias, todos os meses têm que preencher uma folha a dizer o que é que deram a essa família...para que não haja desvio de produtos... lá está, o pouco

que nós conseguimos angariar, certificar que chegar ao destino... e isto foi algo novo que se fez durante a pandemia. Quando os beneficiários se inscrevem pelas instituições, há depois um acompanhamento da segurança social... a SS encaminha para a instituição... passam pela SS todos aqueles que recebem RSI, estão desempregados... agora idosos, que recebe reforma de valor reduzido, esses casos não passam pela SS... vai diretamente à instituição e a instituição é depois responsável por pedir a informação que necessita para formalizar o processo, declaração da pensão, despesas, etc... mas nem todos os beneficiários passam pela SS.

4) Improvement opportunities for the future

- **What is currently missing in the logistical processes of the organization, so that it is possible to have a quicker response to the needy families? If there was one thing you could fix in the current system to address food insecurity, what would that be?**

Angariação precisamos sempre... claro que contamos com a ajuda dos voluntários e eles muitas das vezes não fazem isto por telefone, mas sim presencialmente... temos de ser persistentes, acho que devemos investir mais na parte da angariação ou então colocar mais voluntários para procurar outras empresas... melhorar o sistema de distribuição; entrada de produtos, o picking...

- **In your opinion, how could government, academics and private or public companies be connected together successfully, in order to help to develop a more efficient food distribution network?**

A começar pelo Governo, como sabe nós temos aqui o programa de ajuda alimentar que é através da SS, mas costumo dizer que nós somos uns “cães mandados”... que a única coisa que nós somos é armazém para os produtos e transportador para as instituições... Neste caso, nós entregamos em algumas instituições esse produto, mas é assim, eles estipularam que é aquela quantidade e acabou... não querem saber se a família tem capacidade para receber, capacidade para consumir... não, aquilo foi decretado assim, são aquelas leis e é aquilo que tem de se cumprir... essa parte devia ser muito bem estudada, pois eles não estão no terreno, eles estão sentados numa secretária a ditar leis e não sabem se a família tem frigorífico para guardar, se tem condições para guardar aqueles alimentos todos... e depois no fim, é um desperdício... e depois há notícias a dizer que o BA deu aquele produto a uma instituição e o produto está no lixo.... Nós não

sabemos quem deitou ao lixo e se o deitou, alguma razão tem de ter... porque uma pessoa não tem capacidade colocar não sei quantos pacotes de cenoura, pescada, frango... e depois fora do frigorífico, vai estragar... “as pessoas não vão comer cenouras todos os dias”...é mesmo assim, e acho que essa parte devia ser mesmo alterada... No programa PO, há concursos de várias empresas e a vencedora dá os produtos ao BA. Mas aquilo está estipulado as quantidades por pessoa... apenas somos ponto recetor, onde guardamos os produtos e entregamos nas instituições que por si, entregam às famílias... mas de qualquer forma, como o nosso grande objectivo é lutar contra o desperdício, esta situação faz-nos muita confusão... até porque nos ocupa espaço em armazém e gastamos dinheiro com o armazenamento destes produtos pois as arcas congeladores têm de estar sempre ligadas, as nossas arcas não chegam para o produto, temos de colocar num armazém fora e temos que o pagar...quando isto podia ser mais bem gerido todos os meses e não vir em “catadupla” com 2, 3 ou 4 entregas... quer dizer, tiverem 3 ou 4 meses que não receberam praticamente nada, e agora, vão receber tudo e mais alguma coisa... não está bem... este programa é proveniente de fundos da EU...em relação aos custos de armazenamento e distribuição, o BA recebe uma %, nós não fazemos isto totalmente grátis, mas acabamos por ter mais custos, tivemos de colocar mais funcionários por exemplo.

13.2. Interviews' coding summary

Main code	Sub-codes	Code definition	Brief description
Theme 1: Porto Food Bank structural organization			
a) Teams' composition	<ul style="list-style-type: none"> - Responsibility - Accountability - Team management - Workforce integration 	Assess how the different teams are divided and perceive which are the corresponding functions.	- The working team is separated into 6 main functional areas, namely, distribution management with 2 elements; warehouse management with 7 elements; the social domain with 2 employees; an administrative area with 2 more individuals and finally, an assistant director and the volunteering workforce .
b) Collaboration	<ul style="list-style-type: none"> - Interrelationships - Cooperation - Alliance/partnership - Reutilization of food 	Perceive the inter collaboration between other food banks and how they help each other in terms of share of knowledge and resources.	<p>- Porto Food Bank works as a reception point to the North Region in case of donations from the Portuguese Food Bank Federation. In this sense, the entity is responsible for distributing any donations from the Federation and other campaigns to the smaller food banks in the Northern Region.</p> <p>- In case there is a surplus of food products, most of the times, Porto Food Bank is responsible for distributing the surplus to other banks.</p>
c) Organizational structure	<ul style="list-style-type: none"> - Guidelines - Rules - Decision making process - Configuration 	Understand how the relationship works, between the Federation and the 21 food banks in Portugal.	- The Portuguese Food Banks Federation is responsible for dictating the common functioning rules and the national dates of campaigns that happen at the same time in Portugal. Each food bank has its own decision power to support the institutions from the district in which they operate.
Theme 2: Processes pre-COVID-19 and how they have changed			

a) Methods for sourcing products through partners/donors	<ul style="list-style-type: none"> - Basic procedures within the process - Contact the partners - Collaboration with donors (long term or short term) - Monetary/in-kind donations - Agreement procedures - Campaigns 	<p>Thoroughly understand the process: how does the resourcing plan works? How food bank gets the food products? Which are the extant partner-relationships? Which are the extant campaigns?</p>	<ul style="list-style-type: none"> - The normal fundraising sources of the food bank rely on the campaigns in the supermarket, which ensures the full year distribution of food products. - Moreover, there are 3 other different campaigns: help voucher, “<i>Feed this idea</i>”, paper for food. - Regular or irregular donations from individuals, retail companies, associations...
b) Inflow and outflow of products (fresh and dry products)	<ul style="list-style-type: none"> - Basic procedures within the process - Care and health evaluation of products - Food waste reduction - Stock management - Warehouse management - Volunteering management 	<p>Thoroughly understand the process: how is the process since the products arrive at the warehouse until they are delivered into beneficiaries’ houses? Which are the steps and what does involve in terms of logistical procedures (stock management, warehouse management, volunteer management)?</p>	<ul style="list-style-type: none"> - The inbound process of the products can be divided into two formats: the fresh products and dry products - After doing the reception of the food products, the new level of stocks is given to the distribution team by the warehouse team. Thus, the distribution team knows the accurate quantity of each product, so that the quantities of fresh and dry products can be allocated to the institutions that are coming to collect the food baskets in the following day.
c) Food baskets assembly	<ul style="list-style-type: none"> - Basic procedures within the process - Food products allocation 	<p>Thoroughly understand the process: how are the food baskets assembled? How do they differ between</p>	<ul style="list-style-type: none"> - After doing the inventory, it is possible to exactly know the quantity of each product. Knowing this and the expected entries and exits of products in the next month, it is possibly to approximately calculate the accurate quantity of each

	<ul style="list-style-type: none"> - Flow of information regarding necessities per institution 	<p>institutions? How are the products allocated per food basket? How does the distribution of food baskets happen?</p>	<p>product, and then, a constitution of a food basket can be idealized every month.</p> <ul style="list-style-type: none"> - The focus is to be able to deliver a diversified food basket, but without having the risk of not having enough products to distribute in the next month. Moreover, the food bank is also concerned to maintain a certain homogeneity and regularity in the products that are delivered, so that the families can benefit from food with a certain regularity. - Every month, a food basket type is designed, in which some products are common to every institution. Then, each institution will get a different food basket in terms of quantity depending on the number of families and individuals that they help.
d) Helping requests (individuals or institutions)	<ul style="list-style-type: none"> - Basic procedures within the process of helping requests - Information to be collected per institution/individual 	<p>Thoroughly understand the process: How institutions/individuals get food bank support? Which are the steps and what does the food alimentary agreement states?</p>	<ul style="list-style-type: none"> - Individuals: when an individual or a family directly contacts the Food Bank, the social area department forwards their request to the institution that operates within Porto Food Bank network and that is more closed to the residence area of the beneficiary - Institutions: the process of integration within the network of the food bank, is handled by the social area department, which normally deals with a network of 300 institutions. After the institutions fulfil all the requirements to become a partner of the food bank, an alimentary contract is celebrated, so that rules are specified for both parties, in which both entities are committed to do their best so that the food products can reach the most necessity ones.

e) Institutions supported	<ul style="list-style-type: none"> - Food assistance agreement - Mutual cooperation - Way of operating of each type of institution 	What kind of institutions are supported? How is the relationship between the food bank and the institutions?	<p>- Porto Food Bank operates with 3 institutional types, namely: beneficiaries, intermediaries and mixed. The beneficiaries are the ones that take food products to cook in their facilities and then, the beneficiaries can benefit from having diary meals there. The intermediaries' institutions are the ones that directly distribute the food baskets to the beneficiaries, while the mixed ones have both strands.</p>
Theme 3: Main challenges during COVID-19			
a) Processes changed	<ul style="list-style-type: none"> - Learning/improvement opportunities - Impact of COVID-19 - Reformulation of processes - Flexibility - Resilience - Adaptability - Agility 	Which were the processes most affected and how have they changed? What have been the improvements?	<p>- The challenge of maintaining their normal operations, without running the risk that their 14 employees were affected by COVID-19</p> <p>- A lot of institutions were forced to close due to the pandemic restrictions imposed by the government, causing a disruption in the normal logistical and transportation process with Porto Food Bank.</p> <p>- Existent food products were accumulating in the warehouse and the food bank was forced to gather forces to directly distribute the products to the institutions</p> <p>- Several days without enough employees and volunteers in the food bank to ensure a normal functioning of the entity</p> <p>- Increased growth of the number of help requests directly to the food bank. These changes in the number of beneficiaries supported were not always communicated to the food bank by the institutions, which have resulted in a lack of consistency in the food baskets delivered to them.</p>

			<p>Communication between institutions and the food bank was not always the best, which have originated a divergence on the quantities of the food baskets</p> <ul style="list-style-type: none"> - Visits to the institutions were suspended after the first declared lockdown in the country. - Decrease in donations from community gardens in the district of Porto; impossibility of undertaking the normal biannual supermarket campaigns; suspension of visits to the Porto supply market to safeguard the health of employees and volunteers and the decrease in the surplus food donated by retail food companies, as a result of panic buying and stockpiling as well as an increase of more direct requests for help from other type of solidarity institutions - More challenging the task of finding sources of fresh products to distribute to the institutions - Porto Food Bank has also faced unanticipated costs and a reduction in financial resources
b) Capabilities to sustain the adversity	<ul style="list-style-type: none"> - Resilience - Flexibility - Adaptability - Agility 	Which were the capabilities to sustain such a disruptive event?	<ul style="list-style-type: none"> - The most notorious defiance according to the professionals interviewed, was to maintain a certain resilience level towards the hazardous situation that was happening - The resilience capacity was shown to be a distinctive characteristic of the team... the fact that they had to keep on working no matter what was happening. The entity was forced to innovate, to be creative, to create new answers to the new problems, to create new teams/functions, new ways

			<p>of fundraising, implement new methods, to be more rigorous within their own processes...</p> <ul style="list-style-type: none"> - The enormous capacity of organization and of fundraising in the context that the entity was operating - Resilience and adaptability to change.
c) Innovation strategies pursued	<ul style="list-style-type: none"> - Innovation - Improved processes - Control intensified - Monitorization of processes - Formalization 	Which were the main innovative strategies followed by Porto Food Bank team?	<ul style="list-style-type: none"> - The innovative strategies implemented, namely, new strategies for fundraising; new working methods and processes; new controlling systems and the formalization of functions and teams.