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Impact of the fear of Covid-19 on Perceptions of Physical Shopping

Convenience and Consumer Behaviour in Portugal

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Abstract

The aim of this study is to provide an insight of the fear of Covid-19 felt by the Portuguese and how it impacted their perceptions of physical shopping convenience and consumer behaviour. Specifically, utilitarian and hedonic shopping, the likelihood of stockpiling products and the probability to change the offline shopping to online channels. Statistical evidence was found that fear does influence consumer perceptions and behaviours. Results of this study can be used by companies to better understand customers' reactions to fear-induced situations and quickly adapt to these changes.

Keywords: Covid-19, fear, physical shopping convenience, consumer behaviour

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1. Introduction

The novel Coronavirus that originally started in China in 2019, rapidly spread around the world. Since then, rates of infection and the number of mortal victims began to spike significantly. The ease of contagion and the fact that some people might be asymptomatic and unwillingly infect other individuals are some of the reasons for the fast propagation of the pandemic. As of December 2nd 2020, the virus already infected 63,144,362 persons, and sadly 1,469,237 lost their lives, showing a fatality rate of 2.3% (WHO 2020). Even though Portugal is not one of the worst affected countries by Covid-19, the numbers are not good: 303,846 persons have already been infected and 4,645 lost their lives (DGS 2020).

However, as it was warned by the United Nations (2020), "the Covid-19 pandemic is far more than a health crisis: it is affecting societies and economies at their core". As a way to control the pandemic, firms considered non-essential were forced to close and many even had to dismiss employees. This caused a huge impact on countries' economies and even in the world's economy in generally. Additionally, all non-essential social interactions were limited, countries entered into lockdown and people were forced to stay home, which had a negative impact on mental health (KFF 2020).

There are no doubts that the Covid-19 pandemic affected all domains of our lives (Lins and Aquino 2020). The Covid-19 high infection rate and mortality, the uncertainty about the future, and the possibility of being infected without knowing it, naturally evoked negative emotions on the population, like fear and panic (Lins and Aquino 2020; Ahorsu et al. 2020).

Fear is a powerful emotion with proved impact on perceptions, thoughts, and consumer behaviour (Larson and Shin 2018). It is expected that people with higher levels of fear will have greater concerns about a specific environment and at the same time try to find ways to minimize feelings of threat, normally presented in the form of consumption. Kemp et al. (2014) and Larson and Shin (2018) have proven this relation during natural disasters, specifically

Hurricane Isaac and Hurricane Matthew, respectively. But does the same happen during a global pandemic? As it was said before, a pandemic does evoke fear, as well as intensifies consumer uncertainty. In fact, at the beginning of the Covid-19 pandemic outbreak, there was a race to supermarkets, where shelves were left empty and people bought more products than usual to stock at home (Silva 2020) and also, a significant shift from offline to online shopping. Even though these behaviours were visible, little is known about the fear Portuguese felt during the early stages of Covid-19 and how it affected consumer behaviour.

Therefore, the aim of this study is to understand the impact that the fear of Covid-19 had on consumers' perception of service convenience (specifically on physical shopping), and on consumer behaviour during the early stages of the pandemic, from the 18th of March to the 4th of May, in Portugal. By doing this, the report responds to Larson and Shin (2018), Kemp et al. (2014) and Sneath et al. (2008) general call to study the impact emotions induced by different events have on consumer behaviour and, Sheth (2020) on the specific impact of Covid-19.

Since during periods of big uncertainty and fear it is extremely relevant how a person feels when shopping, in order to decide where to shop (Larson and Shin 2018), this study will provide companies an insight on how customers felt during this time. This will allow companies to better understand the customers and their behaviours and, consequently adapt to the customers' needs and demand, as well as quickly adapt in future crises or pandemics. It will still be analysed if, during the time of answering the survey (from October 19th to November 5th), the fear of Covid-19 and the perceptions of physical shopping convenience changed significantly from the results obtained in quarantine. Additionally, it will be verified if some behaviours adapted during quarantine are still being implemented or if people went back to the old habits.

The paper is organized as follows. At a first stage a literature review will be conducted on fear of Covid-19 and how it affects consumers' perceptions of physical shopping service convenience and consumer behaviour. The data and the methodology will be presented,

followed by the results and its discussion. Finally, a conclusion will be made with the study limitations and suggestions for future research.

2. Literature Review

This research project is based on the study "Fear During Natural Disaster: Its impact on Perceptions of Shopping Convenience and Shopping Behaviour" by Lindsay Larson and Hyunju Shin, published in the Services Marketing Quarterly journal in May 2018. This article studies the impact of fear experienced during a natural disaster on consumers' perception of shopping convenience and shopping behaviour (utilitarian and hedonic shopping). In line with this article, it will be studied the impact of fear of Covid-19 on consumers' perception of physical shopping service convenience, utilitarian and hedonic shopping behaviour during quarantine in Portugal. As an extent of this study, it will be tested whether the fear of Covid-19 explains the transition to online shopping, as well as the incentive to buy more products than normal to stock at home, behaviours visible during this period.

2.1. Contexts that govern or disrupt Consumer Behaviour

According to Sheth (2020), there are four main contexts that can govern or disrupt consumer behaviour habits. The first is the change on social context, which includes the workplace, friends, and community. This change can be caused by different situations as marriage, having children or changing from one location to another. A second context is the evolution of technology. For example, the change to online shopping with the breakthrough of internet. The third context is related with rules and regulations concerning consumption. These rules can discourage consumption (like the rules related with smoking and alcohol consumption) or encourage it, for example free children vaccination. Finally, the fourth context, which is the less frequent and predictable, is related to natural disasters and pandemics, as the Covid-19 global pandemic we are living right now.

2.2. Covid-19 and Fear

According to Madakasira & O'Brien (1987) the most common psychological reaction to a natural disaster is fear. This was not an exception in the case of Covid-19 pandemic. The high infection rate, relatively high mortality, and the uncertainty and low control about the future has led to various emotions such as fear and anxiety (Ahorsu et al. 2020; Lins & Aquino 2020).

Mertens et al. (2020) say that fear is an adaptive emotion in the presence of danger that serves to mobilize energy to deal with a potential threat. According to Larson and Shin (2018), it is expected that, those who experience higher levels of fear, will be more likely to have greater concerns about a hostile environment and initiate attempts to minimize the threat feelings. In fact, fear might trigger safety behaviours and make people follow the government rules, like hygiene behaviours and social distance (Faro et al. 2020; Harper et al. 2020). However, with high levels of fear, people might not think clearly nor act rationally when reacting to Covid-19 (Ahorsu et al. 2020). Therefore, fear can have negative effects both at the individual level (e.g., mental health problems), and at the society level, such as the exaggerated purchase of goods (Mertens et al. 2020; Harper et al. 2020).

2.3. Fear of Covid-19 and Perception of Physical Shopping Service Convenience

According to Wright and Bower (1992), an individual's mood influences the judgement of the uncertainty of a future event. Happy people tend to report higher probability for positive events while sad people tend to provide higher probability for negative ones. This way, it is expected that people with higher levels of fear will be less optimistic (Faro et al. 2020), have more concerns regarding the shopping environment, and perceptions of a greater service inconvenience (Larson and Shin 2018).

Service convenience is the perception customers have of time and effort when shopping for a product or service. According to Berry et al. (2002), time and effort are opportunity costs that prevent the customers from participating in other activities. This way, the greater these costs associated with a service, the lower the consumers' perception of service convenience (Berry et al. 2002).

Seiders et al. (2007), propose a model of service convenience during different stages of the consumers' activities. These go from the decision to where and how to shop, to the actual transactional convenience (e.g. perception of pricing and purchasing problems), and even to the service convenience after the exchange. Various aspects of service convenience will be impacted during a crisis. However, fear is a defensive emotion that can cause a perceptual shift in a way that an external environment may be experienced as more threatened and problematic (Larson and Shin 2018). Hence, customers with higher levels of fear may also have heightening concerns about the service convenience, and consequently, their perceptions can be negatively impacted (Larson and Shin 2018). In fact, Larson and Shin (2018) proved that during the Hurricane Matthew, those who experience higher levels of fear also perceived higher levels of shopping inconvenience.

With these theoretical backgrounds, it will be tested if people with higher levels of fear of Covid-19, have a more negative perception of physical shopping service convenience. Formally:

H1: The higher a consumer's reported levels of fear during quarantine, the more negative their perception of physical shopping service convenience.

2.4. Fear and Consumer Behaviour

According to the Terror Management Theory (TMT), people are aware that death is inevitable (Pyszczynski et al. 2020), causing individuals to act in different ways to find

meaning, order, and stability in the world, and consequently, alleviate existential anxiety (Lins and Aquino 2020; Larson and Shin 2018). Some studies have proven that, such actions to relieve tension of existential anxiety in the face of fearful events, are expressed in the form of shopping (Lins and Aquino 2020; Larson and Shin 2018).

In fact, it is proven that people engage in behaviour changes in the face of emotional distress, such as the occurrence of particular events as natural disasters, terrorist attacks, and healthcare crises (Lins and Aquino 2020; Loxton et al. 2020). According to Larson and Shin (2018), it is not the event itself that determine behavioural changes but the individual's perception of the stressful situation. Pyszczynski (2020) refers that in the case of Covid-19, the root of all problems related with the TMT is clearly the risk of dying from the virus. As it was stated in Lins and Aquino (2020), fear is a powerful driver of consumer behaviour, specifically in times of crisis. This way, it is expected that an increase in fear towards the virus will boost the probability of changes in consumer behaviour.

2.4.1. Utilitarian and Hedonic Shopping

Terror Management Theory notes that individuals have two mechanisms to manage death anxiety, proximal and distal defences. Proximal defence happens when thoughts related with death are conscious, which makes people to change to what they believe are healthier behaviours, and push death into a distant future. Distal defence occurs when death-related thoughts are not conscious and can induce more symbolic defences related with distractions and raising self-steam. Research have also found that distal defence is a way to manage anxiety by reducing the accessibility of such thoughts (Pyszczynski et al. 2020).

Larson and Shin (2018) stated that people with greater level of fear during a natural disaster are more prone to engage in utilitarian shopping as a proximal defence and in hedonic shopping as a distal defence. Covid-19 may or may not be considered a natural disaster, however, it is obviously a situation that affected consumer behaviour. Although utilitarian

shopping as a way to prepare for a threatening environment is a more obvious reaction, hedonic shopping is also expected to occur in response to a fearful event (Larson and Shin 2018).

Hedonic shopping is usually seen as driven by desire for fun and entertainment. However, hedonic shopping also occurs when people shop to alleviate a negative mood, and to forget or distract themselves from stressful situations (Arnold and Reynolds 2003). The current Covid-19 pandemic is an example of such situation and so, it is expected that people with higher levels of fear engage more in hedonic shopping. Additionally, it has to be mentioned that, since during quarantine people were not allowed to leave their houses, except when extremely necessary, online hedonic shopping must be considered (e.g. visits to stores' websites and the addition of products to the shopping cart, even when this is abandoned).

Larson and Shin (2018) proved that during the Hurricane Matthew, people with more fear did engage more in utilitarian and hedonic shopping. This report aims to study if the same occurred during the Covid-19 pandemic.

H2: The higher a consumer's reported levels of fear during the quarantine, the more likely they are to engage in utilitarian shopping.

H3: The higher a consumer's reported levels of fear during the quarantine, the more likely they are to engage in hedonic shopping.

2.4.2. Stockpiling and online shopping

Feelings of fear and uncertainty influence consumer behaviours, leading people to purchase more products than usual to gain a sense of control (Lins and Aquino 2020). Buying more than usual can be seen as a way to minimize a perceived risk, provide security or alleviate stress (Loxton et al. 2020). This behaviour of stockpiling can be also called panic buying and happens normally before, during or after a disaster (Loxton et al. 2020). Panic buying generates a sharp increase in demand for the products that are being stockpiled, which leads to shortages of those products that consequently cause more panic buying and increase in demand (Loxton

et al. 2020). As Loxton et al. (2020) stated, this causes a decrease or even a lack of availability of the products such that some individuals and vulnerable groups do not have access to them as they would normally have.

The fact that, during a pandemic, customers perceive a high probability of contracting a disease and its consequences, it causes fear and uncertainty whether there will be sufficient supplies (Loxton et al. 2020; Lins and Aquino 2020). In fact, during the SARS outbreak in China it was already reported a panic buying phenomenon (Lins and Aquino 2020). However, with the access to the internet and the spread of the virus worldwide, never has there been a mass panic buying as the one experienced during the Covid-19 pandemic (Loxton et al. 2020; Lins and Aquino 2020). Portugal was not an exception of this phenomenon, shelves were being rapidly left empty in supermarkets (Silva 2020).

Following this theoretical background, it will be study if fear did in fact influenced Portuguese to stockpiling products. Formally:

H4: The higher a consumer's reported levels of fear during the quarantine, the more likely they are to stockpiling products.

Additionally, since the pandemic outbreak, there have been a significant increase on online grocery shopping, while the offline channels have had a considerable hit (Celik and Dane 2020). Portugal, once more, was not an exception of this worldwide trend. On a study made in 2018 by the Boston Consulting Group and Google, it was visible that Portugal was behind other European countries when it comes to the impact of online shopping in the GDP (Pereira 2020). However, when comparing with 2019, the pandemic outbreak caused an increase between 40% to 60% on e-commerce of food retail. (Pereira 2020).

As it was said before, fear influences consumer behaviour. This way, it is hypothesized that the change from offline to online channels of groceries shopping is due to fear of Covid-19. In fact, in a study made by Grashuis et al. (2020) in the United States, it was proved that in

states where the pandemic was increasing at a higher rate, there was a higher disutility of shopping inside the store.

Following this theoretical background, the following hypothesis is derived:

H5: The higher a consumer's reported levels of fear during the quarantine, the greater their incentive to buy groceries online during Covid-19.

3. Data and Methodology

3.1. Procedure

As it was stated before, this work project is based on the article "Fear During Natural Disaster: Its impact on Perceptions of Shopping Convenience and Shopping Behaviour" by Lindsay Larson and Hyunju Shin (2018). As it happens in this article, it will be studied the impact of fear on consumer behaviour, more specifically the impact that fear of Covid-19 has on the perception of physical shopping convenience, and on hedonic and utilitarian shopping. Additionally, it will be studied the impact that fear of Covid-19 had on stockpiling, and on the tendency to shift from offline to online grocery shopping.

The data presented in this report was collected by an online survey carried out between October 19th and November 5th. The survey was conducted through Qualtrics and published in different social media platforms where respondents were collected using a snowball sampling approach.

To measure the respondents' fear of Covid-19 and perception of physical shopping convenience during quarantine, two 5-item Linkert Scales were used. Respondents were asked to recall how they felt during the beginning of the pandemic and indicate their level of agreement, from 1 = "strongly disagree" to 5 = "strongly agree", with the statements presented in the scales. The first scale, regarding fear, has seven statements and the second one, regarding

perception of physical shopping service convenience, has three. For the fear of the Covid-19, the Fear of COVID-19 Scale (FCV-19S) developed by Ahorsu et al. (2020) was used. This scale was already adapted and validated to different languages, including Brazilian Portuguese with a Cronbach alpha of 0.864. To measure the respondents' perception of physical shopping service convenience, an adaptation of Larson and Shin (2018) and Seiders et al. (2007) service convenience scale was used to better fit with the current pandemic situation. The scale for the perception of physical shopping service convenience will, from now on, be referred as PPSSCs. In both scales a total score is calculated by adding up each item score. FCV-19S ranges from 7 to 35 and the higher the score, the higher the fear of Covid-19. The PPSSCs ranges from 3 to 15, and since the statements on the survey were made disparagingly, the higher the score, the more negative is the perception of physical shopping convenience. The statements of these scales can be seen, translated to English, in Appendix 1.

Participants were also asked to remember their utilitarian and hedonic shopping behaviour. For the utilitarian shopping, respondents were asked if they went shopping with the sole objective of preparing to the Covid-19 pandemic. For the hedonic shopping, participants were specifically asked if they went shopping or visited stores' websites with the specific intention of entertainment or distracting themselves from the pandemic. Additionally, it was requested for respondents to say whether they bought more products than normal to store at home during this period and if they started to do more online groceries shopping instead of going to the stores. It will only be studied the transition from offline to online shopping on groceries since during this period all non-essential stores were closed.

A second part of the survey will ask the participants their level of fear and perception of physical shopping convenience when completing the survey. For people who claimed to stockpiling and changing to online shopping during quarantine, it will be asked if they kept this behaviour.

Finally, it was asked some demographic characteristics of the respondents for a better insight of the sample. Specifically, age, gender, household income, education, location, and if the person is part of a risk group.

3.2. Dataset

In total, 179 responses were collected although 40 did not finish the survey (dropout rate of 22.35%). Additionally, there were only 2 answers from Alentejo and 1 from the Portuguese islands (Azores and Madeira). To prevent location (habits) misrepresentation these responses were deleted. The final dataset consists of 136 responses

- the respondents are between 18 and 66 years old, with an average age of 37.61 years, being the majority females (69.12%).
- most respondents are from the Center of Portugal (63.97%), followed by the Lisbon area (26.47%) and the North (9.56%).
- 65.44% of all respondents have a University degree, 30.15% have a high school degree and 4.41% have less than a high school degree.
- 42.65% consider have a comfortable household income, 52.94% consider their household income reasonable and 4.41% consider it difficult.
- 18.38% claim to be part of a risk group of Covid-19.

3.3. Data Analysis

The data, collected via Qualtrics, was downloaded as an Excel file and coded numerically to be uploaded in Jamovi for statistical analysis.

Before analysing the impact that fear of Covid-19 had on consumer behaviour, an analysis will be performed to check if different demographic characteristics influence the level of fear of the virus. A linear regression model will be estimated to determine if age influences the level of fear of Covid-19 and a one-way ANOVAs will be used for the other variables.

Additionally, it is also necessary to validate the FCV-19S and PPSSCs. The Cronbach alphas will be determined to validate the scales which, according to Stephanie Glen (2014), should be at least 0.70 for the scales to be used in this study.

After both scales being validated (for the quarantine period and for the time of answering the survey), it will be possible to analyse the data. A linear regression model will be estimated to test if fear of Covid-19 does influence the perception of physical shopping service convenience. To determine if fear influences the other variables (namely utilitarian and hedonic shopping, tendency to stockpiling and to shift to online shopping), due to the nature of the dependent variables, binary logistic regressions were used. Finally, it will be analysed if there was a change of fear of Covid-19, perception of physical shopping, and consumer behaviour since quarantine until the day the survey was filled.

4. Results

The FCV-19S and the PPSSCs were validated meeting the 0,70 criteria: FCV-19S had a Cronbach's alpha of 0.878 during quarantine and 0.888 in the period of completing the survey. PPSSCs was validated with a Cronbach's alpha of 0.702 during quarantine and 0.711 in the period of completing the survey. All the analyses were, then, performed with these new quantitative variables considered proxies of COVID-19 fear and perception of physical shopping, and consumer behaviour.

Regarding the analysis of fear of Covid-19 on different demographic characteristics, the linear regression shows a p-value of 0.949 and a low r^2 (0,0000304), meaning that the fear Portuguese have of coronavirus does not seem to be age dependent (the completed linear regression can be seen in Appendix 2).

Both the household income and whether a person is part of a risk group, also do not influence the fear of Covid-19 (Table 1). However, gender, education and location significantly

influence it. Specifically, women and respondents with a lower level of education showed a higher level of fear of Covid-19 than those with a university degree. Regarding the respondents' location, people that live in the center region of Portugal are the ones who display a higher level of fear, followed by the North and Lisbon area.

Table 1: One-Way ANOVA Analyses for FCV-19S

Group Descriptive	N	Mean	SD	p-value
Gender				<0.001
Female	94	19.7	5.28	
Male	42	15.4	5.35	
Household income				0.260
Comfortable	58	18.2	5.45	
Reasonable	72	18.0	5.41	
Difficult	6	24.0	8.15	
Education				0.007
University degree	89	17.0	5.26	
High School degree	41	21.1	5.54	
Less than high school	6	19.2	5.91	
Location				0.030
North	13	17.2	6.45	
Center	87	19.3	5.51	
Lisboa and Vale do Tejo	36	16.4	5.22	
Risk Group				0.215
Yes	25	19.6	5.24	
No	111	18.1	5.72	

According to Hypothesis 1, the higher a consumer's reported level of fear during quarantine, the more negative their perception of physical shopping convenience. The results of the linear regression (Appendix 3) show that the fear of Covid-19 significantly predicted the perception of physical shopping convenience, since the *p-value* < 0.01 and F=12 > CV (1,134) = 3.91, with 8.24% of the variance explained by the fear of Covid-19 ($r^2 = 0.0824$). This way,

H1 is supported, meaning that those who expressed greater fear of Covid-19 during quarantine had a higher perception of physical shopping inconvenience.

In order to find out if the fear of Covid-19 encouraged utilitarian (H2) and hedonic shopping (H3), binary logistical regressions were made. Regarding utilitarian shopping, results reveal that there is a significant relationship between fear of Covid-19 and utilitarian shopping ($p = 0.043$). Additionally, the accuracy of the test, (i.e. the number of cases correctly predicted by the model) is 55.9%. The odds ratio for this analysis shows that, for each additional point in fear of Covid-19, there is an increase on the likelihood of having shopped for utilitarian purpose of 6.5% (odds ratio = 1.065). Secondly, results for the hedonic shopping reveal that there is also a significant relationship with fear of Covid-19 ($p = 0.002$). In this case, the accuracy is even higher. The number of cases correctly predicted by the model is 72.1%. The odds ratio shows that, for one additional point in the fear of Covid-19, the likelihood of having shopped for hedonic purposes increases by 11.02%. Therefore, H2 and H3 are supported. The higher a consumer's reported levels of fear during the quarantine, the more likely they were to engage in utilitarian and hedonic shopping. A graphic representation can be seen below (Figure 1 and Figure 2) and the tables with the binary logistic regressions can be found in Appendix 4 and 5.
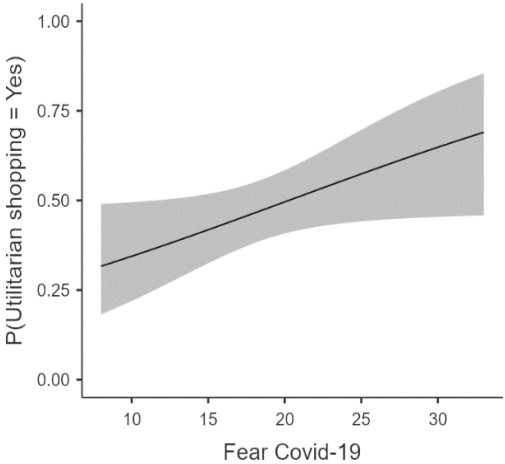

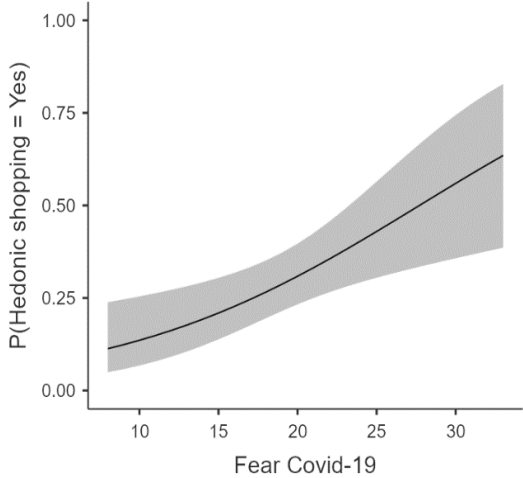*Figure 1:Impact of fear of Covid-19 on Utilitarian Shopping*

Figure 2:Impact of fear of Covid-19 on Utilitarian Shopping

It was further hypothesized that the higher a consumer's reported level of fear during quarantine, the more likely it is to stockpiling products and to have a higher incentive to do online grocery shopping. Concerning the binary logistic regression for the probability of stockpiling products, the results show a significant relationship with fear of the virus ($p = 0.042$) and an accuracy of 53.7%. The odds ratio indicates that, per each additional point of fear of Covid-19, there is an increase of the probability of stockpiling products of 6.5%. Fear of Covid-19 is also significantly related with the incentive to buy groceries online ($p = 0.042$), where the number of cases correctly predicted by the model is 71.3%. The likelihood of starting to do more online grocery shopping increases 7.2% by one-point increase of fear of Covid-19. This way, it is proven that people with higher levels of fear are more likely to stockpiling products and to prefer online grocery shopping. Therefore, H4 and H5 are supported. A graphic representation of the impact that fear of Covid-19 had on the incentive of stockpiling products and on online grocery shopping during quarantine can be seen in Figure 3 and Figure 4, respectively. A table more detailed of the binary logistic regressions can be consulted in Appendix 6 and 7.
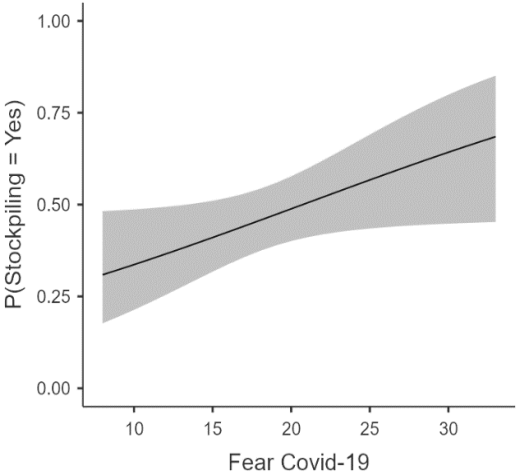

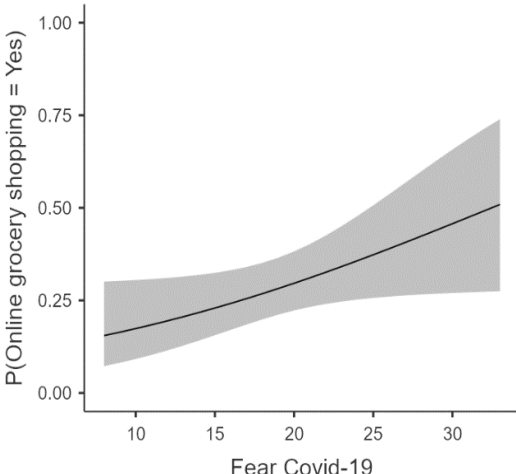*Figure 3: Impact of fear of Covid-19 on stockpiling*

Figure 4: Impact of fear of Covid-19 on online grocery shopping

Finally, it is important to mention the changes of fear of Covid-19, perception of physical shopping convenience and consumer behaviour (such as the likelihood of stockpiling and preferring online grocery shopping), since quarantine until the date the survey was filled. The sample registered a decrease on the mean of the fear of Covid-19 of 4.9% (from 18.34 points to 17.44) and a decrease on the mean of the perception of physical shopping convenience of 19.6% (from an average of 9.64 to 7.75). In other words, from quarantine until the end of October and beginning of November, people started to be less afraid of coronavirus and to have a higher perception of physical shopping convenience. Additionally, 63 persons confirm to have stored more products than usual in preparation to the pandemic, which correspond to 46.32% of the sample and, of these, 38.10% (24 respondents) admit continuing stockpiling products. At last, 27.94% of the respondents (38 people) claimed to start doing online grocery shopping during quarantine to avoid going to the store and, of these, 63.16% (24 persons) affirm continuing to do so.

5. Discussion and Implications

The purpose of this study was to investigate the way fear of Covid-19 affected the Portuguese perceptions of physical shopping convenience and their consumer behaviour. Specifically, the utilitarian and hedonic shopping, the likelihood of stockpiling products at home and switching from offline to online grocery shopping. Overall, the results supported all the hypotheses formulated.

5.1. Discussion of results

The results presented in this study are aligned with the theoretical work used as base for this project. In accordance with literature, it was supported that fear affects consumers' perceptions and shopping behaviour. Specifically, these results show that Portuguese had a similar behaviour reacting to the fear of the virus as people normally have reacting to fear of a

natural disaster. In detail, Portuguese with higher levels of fear of Covid-19 are the ones who shopped the most to prepare for the pandemic (utilitarian shopping) and to distract themselves from the situation they were facing (hedonic shopping). Additionally, these are the ones that have a worst perception of physical shopping convenience. However, during the time the survey was distributed, even though the daily number of new cases of Covid-19 discovered in Portugal was bigger than the numbers in March (average of 3,413.28 new cases everyday), the fear of Covid-19 decreased among the Portuguese and people become less concerned about the physical shopping convenience. This might indicate that people are learning how to live with the new coronavirus. However, this could also mean people are starting to be less rigorous on the precautions taken.

Furthermore, fear of Covid-19 also influences the Portuguese likelihood of stockpiling products at home. According to the Portuguese newspaper *Público*, one week before the beginning of quarantine, half of household purchases were in essential goods and pharmacies. In fact, in the sample of this report, the products Portuguese admitted storing the most were food; specifically, canned (84.13%) and frozen food (60.32%). This was followed by individual protection products for the pandemic, such as masks and gloves (57.14%), and disinfectant (55.56%). 53.97% of the respondents also admitted storing a bigger quantity of medicine and 34.92% a bigger quantity of cleaning products. Even though the number of people stockpiling products decreased in the period the survey was filled, the products mainly stored were the same as the ones stored during quarantine with a small increase on the percentage of people that stocked disinfectant, medicines and masks and gloves.

Finally, it was also proved that fear of Covid-19 influenced the probability of Portuguese to engage in online groceries shopping instead of going to the physical store. In fact, among those who confessed to switch for online grocery shopping, 71.05% admitted not feeling

comfortable going to a store and 81.58% even said not feeling safe shopping physically at a store.

It is yet visible that some people that changed the behaviour during quarantine, namely stockpiling products at home and starting to buy more groceries online, continue with these habits. Hereupon, firms must take into consideration these changes and adapt its services.

5.2. *Managerial Implications*

The Covid-19 pandemic is still not over and global pandemics are becoming more frequent over the years (Gill 2020). Thereby, companies must adapt their businesses to this new reality. To adapt, companies should understand the customers' fears and concerns since these, as it was proven, influence the consumer behaviour.

This study shows that women and people with a lower level of education are the ones who have more fear of Covid-19. These are the ones that shop the most, both to prepare for the pandemic as well as to distract themselves from the current situation, and the ones who are more likely to stockpiling products. However, this does not mean that companies should target customers who have more fear due to their higher incentive to shop. In fact, this can even negatively impact the reputation of the company when such situations are discovered. According with the Portuguese newspaper *Sábado*, at the beginning of the outbreak of the pandemic in Portugal, various companies, from different industries, tried to take advantage of the fear of the Portuguese population (Marques 2020). For example, alternative therapists tried to sell useless treatments to protect from the virus, which could even give a false sense of security to customers.

Companies should therefore focus on customers' well-being instead of sales and build trust with clients. For instance, a supermarket in Sacavém made available bread from the previous day to clients in economic difficulties. A picture with this initiative was shared various times on social media and praised from all that saw it. Likewise, companies could use their

social media platforms to show support through motivational messages and to give information to the customers of opening hours. They could, additionally, indicate the precautions taken in the installations to decrease the propagation of the virus, which would help diminish customer anxiety and fear when shopping while it could even help built gratitude and maybe recruit new customers.

However, it is not always easy to help stabilize customers' fear. The communication industry has a lot of responsibility in this aspect. According to Mertens (2020), stronger messages on media induce more fear in the population, which can make people follow more the government rules, but when these messages are not well controlled and organized, they can only cause distress and negatively affect consumer behaviour. In the case of Portugal, the virus propagation and mortality rate were all over the news since the beginning of March. Also, news of supermarkets shelfs being left empty in different countries were in all televisions and newspapers even before the pandemic arrived in Portugal. This caused fear of products shortage among Portuguese and consequently a run to the supermarkets with the objective to hoard products. The government could control the fear by sending clear information and objective regulations. Nevertheless, companies need to understand customers and know how they are going to react so that they can be ready to the new demand.

As reported by Sheth (2020), one of the most important managerial implications is to match supply and demand. Demand inevitably changes during emotional periods and firms have to adapt its supply. If firms understand the necessity people have to hoard products in emergencies, and what products are more likely for customers to excessively buy, it is easier to adjust the inventories and better respond to the huge increase in demand (Wang 2020). Furthermore, it was showed that people with higher levels of fear of the virus are more concerned with the physical shopping convenience, this way, firms should consider solutions more appealing to the customers. In fact, the Covid-19 pandemic made a lot of people prioritize

online grocery shopping. Companies should then develop e-commerce channels or improve its capacity to provide online shopping to match the increasing demand for this alternative shopping channel. This alternative channel would benefit people that have lower perception of physical shopping convenience during a pandemic and people who are afraid of contracting the virus in stores, allowing them to still have access to the desired goods avoiding unnecessary anxiety.

These changes happened in March, but some people continue to practise these new habits. The fact that the Covid-19 pandemic is not over and the high probability of new waves until the vaccine is officially distributed in all countries, do not give enough safety for consumers to go back 100% to old habits. As a matter of fact, Sheth (2020) stated that people will not go back to old habits when the pandemic is over if the new acquired habits bring significant improvements to people's lives. Thereby, companies should improve its channels and its capacity to adapt to changes not only in the short-run but also in the long-run.

It is also worth mentioning the responsibility firms have now that people are becoming less afraid of the coronavirus, even though the daily number of new cases are higher than never. The fact that the fear of Covid-19 is decreasing, might indicate a reduction on the cautions taken by individuals to control the spread of the virus. This way, firms should be even more careful and make sure both the employees and the customers are following the government regulations.

6. Conclusion

In this section, a summary of the study, the limitations faced and recommendations for future research will be made.

Considering all that has been said before, it is clear that the psychological impacts Covid-19 has on individuals and society should not be ignored (Lins and Aquino 2020). It was proved that the fear of Covid-19 reshaped consumer behaviour. Specifically, the fear of Covid-19

encourages utilitarian and hedonic shopping, increases the probability to stockpiling products and influences the preferential way of shopping. Firms must study the impact that coronavirus has on consumer behaviour and adapt to its changes without taking advantage of the consumers' fear. Additionally, firms should be always prepared to quickly adapt to changes since this pandemic is not over yet, more waves cannot be discarded, and it is proven that pandemics will become more regular (Gill 2020).

During the elaboration of this Work Project, some limitations that were faced should be noted. First, the data was collected through a snowball sample, resulting in a sample by convenience. Consequently, the sample was non-representative in some economic classes, educational levels as well as in the representativeness of the location. This may limit the generalization of the sample to all the Portuguese population. Second, since this is such a recent topic, it is not possible to know the impact in the long run. Therefore, longitudinal studies should be made to research the evolution of fear and its impact on consumer behaviour over time.

Further from the referred, some other studies could be made to complement this one. First, future research could investigate if these findings remain in future pandemics. Furthermore, since this study was only made for Portuguese living in Portugal, future research should see the impact fear has in different countries and cultures. Moreover, these variabilities in consumer behaviour were found to be correlated with fear. Despite that, it can also be study if demographic variables (such as age, gender or the educational level) have an impact on it. Additionally, this work project only studies the fear for the respondent own safety. Future research could focus on whether the fear of the consequences of Covid-19 on others, such as family or friends, also has an impact on consumer behaviour. Finally, as it was suggested by Larson and Shin (2018) and Kemp et al. (2014), among others, it would be interesting to find

out the impact of positive emotions, such as hope, on consumer behaviour once this report focuses only on the influence of a negative emotion.

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8. Appendices:

Appendix 1:Statements of FCV-19S and PPSSCs

Scale	Statements
FCV-19S	I am most afraid of Covid-19.
	It makes me uncomfortable to think about Covid-19.
	My hands become clammy when I think about Covid-19.
	I am afraid of losing my life because of Covid-19.
	When watching news and stories about Covid-19 on social media, I become nervous or anxious.
	I cannot sleep because I am worrying about getting Covid-19.
	My heart races or palpitates when I think about getting Covid-19.
PPSSCs	I will have to wait in longer lines.
	I will probably have to pay higher prices for products.
	I will probably not find what I need at the store.

Appendix 2: Linear Regression Analysis ($Fear\ of\ Covid19 = \beta_0 + \beta_1 * Age + \varepsilon$)

Linear Regression

Model Fit Measures

				Overall Model Test			
Model	R	R²	Adjusted R²	F	df1	df2	p
1	0.00551	3.04e−5	−0.00743	0.00407	1	134	0.949

Model Coefficients - Fear Covid-19

Predictor	Estimate	SE	t	p
Intercept	18.27251	1.2441	14.6871	< .001
Age	0.00194	0.0305	0.0638	0.949

Appendix 3: Linear Regression Analysis
(Perception of Physical Shopping Service Convenience $= \beta_0 + \beta_1 *$
Fear of Covid19 + Ɛ)

Linear Regression

Model Fit Measures

				Overall Model Test			
Model	R	R²	Adjusted R²	F	df1	df2	p
1	0.287	0.0824	0.0755	12.0	1	134	< .001

Model Coefficients - Perception of Physical Shopping Service Inconvenience

Predictor	Estimate	SE	t	p
Intercept	7.317	0.7003	10.45	< .001
Fear Covid-19	0.127	0.0365	3.47	< .001

Appendix 4: Binomial Logistic Regression Analysis of Utilitarian Shopping

Binomial Logistic Regression

Model Fit Measures

				Overall Model Test		
Model	Deviance	AIC	R^2_{McF}	χ^2	df	p
1	184	188	0.0217	4.09	1	0.043

Model Coefficients - Utilitarian shopping

Predictor	Estimate	SE	Z	p	Odds ratio
Intercept	−1.2728	0.6078	−2.09	0.036	0.280
Fear Covid-19	0.0628	0.0316	1.99	0.047	1.065

Note. Estimates represent the log odds of "Utilitarian shopping = Yes" vs. "Utilitarian shopping = No"

Prediction

Predictive Measures

Accuracy
0.559

Note. The cut-off value is set to 0.5

Appendix 5: Binomial Logistic Regression of Hedonic Shopping

Binomial Logistic Regression

Model Fit Measures

Model	Deviance	AIC	R^2_{McF}	χ^2	df	p
				Overall Model Test		
1	154	158	0.0563	9.17	1	0.002

Model Coefficients - Hedonic shopping

Predictor	Estimate	SE	Z	p	Odds ratio
Intercept	−2.898	0.7281	−3.98	< .001	0.0551
Fear Covid-19	0.105	0.0358	2.92	0.003	1.1102

Note. Estimates represent the log odds of "Hedonic shopping = Yes" vs. "Hedonic shopping = No"

Prediction

Predictive Measures

Accuracy
0.721

Note. The cut-off value is set to 0.5

Appendix 6: Binomial Logistic Regression of Stockpiling

Binomial Logistic Regression

Model Fit Measures

Model	Deviance	AIC	R^2_{McF}	χ^2	df	p
				Overall Model Test		
1	184	188	0.0220	4.14	1	0.042

Model Coefficients - Stockpiling

Predictor	Estimate	SE	Z	p	Odds ratio
Intercept	−1.3111	0.6091	−2.15	0.031	0.270
Fear Covid-19	0.0632	0.0316	2.00	0.046	1.065

Note. Estimates represent the log odds of "Stockpiling = Yes" vs. "Stockpiling = No"

Prediction

Predictive Measures

Accuracy
0.537

Note. The cut-off value is set to 0.5

Appendix 7: Binomial Logistic Regression of Online Grocery Shopping

Binomial Logistic Regression

Model Fit Measures

				Overall Model Test		
Model	Deviance	AIC	R^2_{McF}	χ^2	df	p
1	157	161	0.0256	4.12	1	0.042

Model Coefficients - Online grocery shopping

Predictor	Estimate	SE	Z	p	Odds ratio
Intercept	−2.2512	0.6934	−3.25	0.001	0.105
Fear Covid-19	0.0693	0.0346	2.00	0.045	1.072

Note. Estimates represent the log odds of "Online grocery shopping = Yes" vs. "Online grocery shopping = No"

Prediction

Predictive Measures

Accuracy
0.713

Note. The cut-off value is set to 0.5