

**E-COMMERCE: ONLINE CONSUMER, SERVICE FAILURES
AND THE *SERVICE PARADOX***

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- Spine -

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Abstract

In a world where the online space gains gradually more territory and becomes a central part of people's lives, it is evident that e-commerce will continue to grow and become a natural form of shopping. Equally to its traditional variant, e-commerce is not free from failures, and has in fact the additional disadvantage of not featuring human physical interactions. That is why it is so important for e-retailers to learn about their consumers' preferences and shopping behaviors, which will allow them to adapt and improve their services and recovery strategies.

After an extensive literature review related to the study's main subjects, it appeared to be extremely pertinent and valuable to study a Portuguese consumer sample, allowing its characterization. This study provides an understanding of consumers' behavior regarding their online shopping attitudes, their failure experiences and their recovery preferences. It is therefore a useful tool for service providers who seek to improve their customer service and consumer satisfaction.

Results show that delivery service variants play an important role when it comes to the experience of delivery failures and consumer satisfaction. Through this study, it is also possible to see how there are a few indicators that do not exclude the possibility of the existence of the phenomenon called *recovery paradox*, controversial concept regarding consumer post-failure satisfaction.

Key-Words: E-commerce, Retail, Consumer Satisfaction, Purchasing Behavior.

JEL classification: L81; M19

Resumo

Num mundo onde o espaço *online* conquista cada vez mais território e se torna numa parte central da vida das pessoas, é natural que o comércio eletrónico tenha, a curto-prazo, um grande crescimento e se estabeleça como uma forma natural de comércio. Tal como a sua variante tradicional, o retalho eletrónico não está livre de falhas. Tem, na verdade, a desvantagem adicional de não contemplar qualquer interação presencial, que representa muitas vezes uma ferramenta de recuperação de falhas valiosa. Por essa razão, é importante que os retalhistas conheçam as preferências e os comportamentos dos seus consumidores, permitindo-lhes adaptar e melhorar os seus serviços e as suas estratégias de recuperação de falhas.

Após uma extensa revisão de literatura relacionada com os temas principais deste estudo, tornou-se claro que seria pertinente estudar uma amostra de consumidores portugueses, com o objetivo de fazer a sua caracterização. Este estudo permite conhecer os consumidores portugueses no que diz respeito ao seu comportamento de compra, à sua experiência de falhas e às suas preferências de recuperação das mesmas. É, por isso, uma ferramenta útil para retalhistas que pretendam melhorar o seu serviço e a satisfação dos seus consumidores.

Os resultados indicam que as variantes do serviço de entrega têm influência na experiência de falhas e na satisfação dos consumidores. Foi também possível observar que determinados fatores não excluem a possibilidade de existência do fenómeno *paradoxo de recuperação da falha*, conceito controverso acerca da satisfação do consumidor após ter experienciado uma falha e a sua conseqüente recuperação.

Palavras-chave: E-commerce, Retail, Consumer Satisfaction, Purchasing Behavior.

Classificação JEL: L81; M19

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1. Introduction

1.1 – Context

In the world of business, service failures happen all the time; they are common phenomena. When we talk about human-based processes and physical interactions, the failure risk is inevitable because of the flawed nature of human beings. If we look at it this way, then the next logical step is to assure proper failure management. Companies and service providers have all the interest in recovering from a failure, guaranteeing customer satisfaction, and even foreseeing future failures. It gives them the opportunity and the power to control, or at least mitigate, the chances of losing unsatisfied customers over errors.

The risk of leaving a customer unsatisfied is even greater when we talk about e-commerce. Since e-commerce is mainly done virtually, the service failures that happen can be even harder to recover from than if it is in a brick-and-mortar organization. This is due to the inexistence of immediate physical interaction between the service provider and the customer, thus eliminating the advantage of having a social engagement between both which could potentially ease the tension. Furthermore, e-commerce customers often fail to give companies their feedback, even in service failure situations, making it harder for those companies to understand customers' expectations, needs and wants. That is why service failure recovery is so important for businesses, especially in e-commerce, and represents such a great opportunity for thorough investigation.

Customer retention is, and always will be, a fundamental subject for service providers because it is what drives their commerce and their purpose. Most of them are aware of that and have defined customer retention strategies, including recovery measures in cases of service failures. However, it is possible that after a successful service recovery, customers demonstrate a higher satisfaction than if a failure had not occurred in the first place.

This concept is called the *recovery paradox* and it represents an opportunity for close study. Several researchers have written about the *recovery paradox*, however the different findings are mixed, some defending its existence and others arguing the lack of evidence to support it. This phenomenon is both a controversial and interesting subject to research, representing an opportunity for progress and development for service providers.

The focus of this study is to understand the online Portuguese consumer, in particular their preferences regarding service failures and recoveries, taking into account their

sociodemographic characteristics. Special attention will also be given to the existence or absence of the *recovery paradox* phenomenon within this target to further investigate the question “*How can e-retailers improve their service?*”.

1.2 – Objectives

Since the main objective of the current study is to profile the Portuguese online consumer by their social and demographic characteristics and understand how they perceive service failures and recoveries, several sub-objectives are outlined, additionally to the research question “*How can e-retailers improve their service?*”. Its answers are a useful and resourceful tool for service providers to recover successfully from their failures, engage and retain customers and, possibly, learn how to take advantage of their mistakes.

In order to achieve that, a review is made on the existing literature about this subject, with the following structure:

- Development of the e-commerce concept, the difference from e-business, and the existing types of e-commerce transactions;
- An online consumer characterization, using the Technology Acceptance Model (TAM) and the e-Commerce Adoption Model (e-CAM);
- A closer and contextual approach on e-commerce in Portugal and the Portuguese online consumer;
- Review about service failure and service recovery, including the different existing types, and the need of understanding the satisfaction concept;
- Explanation of the *recovery paradox* phenomenon and how distributive justice, procedural justice and interactional justice can improve its understanding;
- A review on the many mixed findings about the *recovery paradox*, summarizing and explaining the different authors’ investigations and conclusions.

1.3 – Structure

First and foremost, in the second chapter of this thesis, a literature review is presented focusing on the main concepts in order to understand the core subject. The second chapter gives the basic theoretical knowledge and represents the foundations of such important concepts, such as e-commerce, online consumer and *recovery paradox*.

The research methodology is explained in the third chapter, where the various methodological steps are described and the research hypotheses enumerated. Results from the data analysis are presented in chapter four.

The conclusions and findings of this study are outlined and explained in the last chapter, as well as some discussion on the topic.

2. Literature Review

2.1 – E-commerce

The concept of electronic commerce (e-commerce) has been referred to in different perspectives. The communications perceptive, in which e-commerce is the delivery of information, products or services or payment by electronic means; a business process perspective, in which it is the application of technology towards the automation of business transactions and workflows; a service perspective, enabling cost cutting at the same time as increasing the speed and quality of service delivery; and finally an online perspective, being the buying and selling of products and information online (Kalakota and Whinston, 1997). As defined by Turban *et al.* (2015), e-commerce is the purchase, sell, transport, or trade data, goods, or services through the Internet. E-commerce ultimately represents “*all electronically mediated transactions between an organization and third party it deals with*” (Chaffey, 2007: 8).

E-commerce is often confused with e-business, but the two are distinct concepts. E-business is a much broader definition that not only includes the selling of goods and services online, but all kinds of businesses such as the servicing of customers, collaborations with business partners, e-learning and electronic transactions with organizations (Turban *et al.*, 2015). In that sense, e-commerce can be considered as a subset of e-business, narrowing down the definition.

There are several types of electronic commerce, depending on how the order, payment, fulfillment and delivery (shipment) are made. If these procedures are made physically and not digitally, then there is no e-commerce at all. However, if at least one of the activities is digital, then we can consider that there is e-commerce, but only partially. It will be considered pure when all the process activities are done digitally (Turban *et al.*, 2015).

As for companies or organizations that make the commerce possible, they are also divided in various types. The companies that exist in a purely physical manner are called brick-and-mortar organizations, and the ones that exist only digitally are called virtual organizations. Those that combine the two, virtual and physical, are the so-called click-and-mortar organizations. Usually these companies are those using the virtual component as an extra channel besides their traditional physical establishment (Turban *et al.*, 2015).

As for the participating actors involved in this type of commerce, they can also define the type of e-commerce transaction that is being registered. The two main players are Consumers and

Businesses, and they can either transact within one another or with each other. Table 1 illustrates this categorization.

Table 1 - Types of E-commerce Transactions (Chaffey, 2009)

	<u>Consumer</u>	<u>Business</u>	<u>Government</u>
<u>Consumer</u>	Consumer-to-Consumer (C2C) - consumers transact directly with other consumers (ex: eBay)	Consumer-to-Business (C2B) - in the transaction consumers engage directly with companies (ex: consumer feedback)	Consumer-to-Government (C2G) – feedback to government through pressure groups or individual sites
<u>Business</u>	Business-to-Consumer (B2C) - transaction between organizations and consumers (ex: Amazon)	Business-to-Business (B2B) - companies transact with each other (ex: Eurooffice)	Business-to-Government (B2G) – feedback to government businesses and non-governmental organizations
<u>Government</u>	Government-to-Consumer (G2C) – national government transaction (tax), national government information and local government services	Government-to-Business (G2B) – government services and transactions (tax) and legal regulations	Government-to-Government (G2G) – Inter-government services and exchange of information

2.2 – Online consumer

In order to provide a service, a product or an experience, an online business needs to understand what the consumers want, their preferences and what they value. To respond to consumer demand, marketers must first understand the consumer (Peppard and Buttler, 1998).

The technology acceptance model (TAM model), which studies the acceptance of information technology (IT) and the factors that influence it, predicts user acceptance based on two important factors: perceived ease of use (PEU) and perceived usefulness (PU). These two factors consequently determine an individual’s behavior intention (BI) to use an information technology.

Throughout the years, the TAM model has been deeply analyzed and adapted to other realities. Researchers have taken it and used it to study users’ behavior on the Internet, eventually having to adapt it. Lee *et al.* (2001) used and adapted the TAM model in order to focus on consumers’ usage on e-commerce, leaving BI out of the original model. Their new proposed model is the e-Commerce Adoption Model (e-CAM), “*which attempts to examine the important factors that predict consumers’ online purchasing behavior*” (Lee *et al.*, 2001: 3), namely: perceived ease of use, perceived usefulness, perceived risk with products/services (PRP), and perceived risk in the context of online transaction (PRT) (Lee *et al.*, 2001).

For each one of these factors, a number of sub-factors were attributed, as Table 2 indicates.

Table 2 - e-CAM's factors that influence consumers' behavior online and subsequent sub-factors (Lee et al., 2001)

<u>Factors</u>	<u>Sub-factors</u>
<u>PEU</u>	<i>ease of information search, ease of ordering, ease of using customer service, and overall ease of use</i>
<u>PU</u>	<i>saving of money, saving of time, vast selection of products/services, and overall usefulness</i>
<u>PRP</u>	<i>functional loss, financial loss, time loss, opportunity loss, and overall perceived risk with product/service</i>
<u>PRT</u>	<i>privacy, security (authentication), nonrepudiation, and overall perceived risk on online transaction</i>

Results from their study conclude that perceived usefulness, perceived risk in online transaction and perceived risk with product/service all have a significant impact on consumers' online behavior, influencing it somehow. Predictably, the most influential factor that influenced negatively the B2C commerce turned out to be the perceived risk regarding online transactions. Another conclusion draws attention to the little connection and influence PRP and PU have on each other, and instead shows us that PRP has a strong relationship with e-commerce adoption. Without surprise, consumers' perceived usefulness on e-commerce is much more affected by the risk linked to online transactions, such as privacy and security related issues, rather than the risk associated to the product/service itself.

2.3 – E-commerce in Portugal

In 2012, there were 2.5 billion internet users in the world and about 250 billion euros spent online. Portugal is no exception of this rising tendency, as there was a more than 30% increase from 2009 to 2012 in internet users and projections of 26% more until 2017. The Portuguese internet penetration is estimated to get closer and closer to the U.S.'s until 2017, and between 2009 and 2012, online shoppers almost doubled in Portugal, being that in the latter year, one fourth of the Portuguese population bought something online. The volume of B2C business online actually doubled (52%) in four years, and when summed up with the volume of business of B2B and B2G e-commerce, it turns into a 70% rise (IDC/ACEPI, 2013). In fact, in 2014, 41

companies participated in a research where 66% said they had increased their sale volume and 71% the number of clients, when comparing to the homolog period (Netsonda/ACEPI, 2014).

Revealed by a study made in 2013, 23% of the Portuguese population were going to buy their Christmas gifts online (Netsonda, 2013). There are about 5.64 million internet users in Portugal, meaning that 2 in every 3 Portuguese citizens have experimented the online world (Markttest, 2015).

2.4 – Portuguese online consumer

According to INE (2011), the average online consumer lives in Lisbon, is in the age interval between 25 and 34 years (19%), graduated and is generally a student. On a more specific note, and still according to the same report, the greatest portion (14%) of e-commerce consumers live in Lisbon, followed by the 12% that live in Algarve. The online consumer is greatly represented by an educational and academic universe, due to the fact that 28% of e-commerce consumers are graduates, 21% are in high school and the main job occupation of 16% of those types of consumers is being a student (Almeida, 2012).

2.5 – Service Failure and Service Recovery

Although e-commerce service failures are less likely to occur than in traditional commerce due to the less heterogeneous process caused by a technology-based encounter, service failures are seen as unavoidable in the world of service delivery due to their inevitable human-based nature, because of its absence of perfection (Hoffman *et al.*, 2005; Bowen and Lawler, 1992; Hoffman *et al.*, 2016). In fact, according to market research, “*one out of every four online shoppers perceive that there are “major” problems associated with online shopping, ranging from confusing information, long upload sessions, and payment difficulty*”, which comes to show how vulnerable e-commerce is and how likely service failures are to occur (E-Marketer, 2001b; Hoffman *et al.*, 2005). Due to this, it is important for service providers to develop strategies to recover from the failures their services might produce, especially in e-commerce since generally there is no human factor involved in a physical interaction recovery (Hoffman *et al.*, 2005; Hoffman *et al.*, 2016).

Previous Critical Incident Technique research has indicated that brick-and-mortar service failures can be classified through 15 types of failures, whereas the service recoveries can be

identified by 12 types (Kelley *et al.*, 1993; Hoffman *et al.*, 2005). These types of failures and recoveries can easily be applied to the virtual organization reality, as exemplified by Hoffman *et al.* (2005) in their research on the typologies of e-commerce failures and recovery strategies using the CIT methodology (which was also used by brick-and-mortar authors Kelley *et al.*, 1993).

Table 3 - Retail and e-tail failures (Hoffman *et al.*, 2005: 3)

Failure Type		
Group 1 - Response to service delivery/product failure	Group 2 - Response to customer needs and requests	Group 3 - Unprompted and unsolicited actions
Policy failure	Special order/request	Mischarged
Slow/unavailable service	Customer error	Accused of shoplifting
System pricing	Size variation	Embarrassments
Packaging errors		Attention failures
Out of stock		
Product defect		
Hold disaster		
Altercations and repairs		
Bad information		
Website system failure		

Table 4 - Retail and e-tail recovery strategies (Hoffman *et al.*, 2005: 3)

Recovery Type
Discount
Correction
Manager intervention
Correction plus
Replacement (via original channel)
Apology
Refund
Customer-initiated correction
Store credit

Unsatisfactory correction
Failure escalation
Nothing
Replace at brick-and-mortar

Many studies have been made in the effort to help companies achieve successful recovery strategies, and it has been demonstrated by some that an appropriate recovery strategy can uplift a customer's satisfaction level after experiencing a service failure. Service recovery is defined by Hess *et al.* (2003: 129) as the “*actions and activities that the service organization and its employees perform to “rectify, amend, and restore the loss experienced” by customers from deficiencies in service performance*”, and can be described in a simpler way as the “*service provider's action when something goes wrong*” (Grönroos, 1988; Michel, 2008).

It is important to clarify the notion of satisfaction, as it is the main factor of influence in service failure and service recovery. Usually the concept of satisfaction is described using the expectancy disconfirmation paradigm (Oliver, 1977, 1988), which states that “*positive disconfirmation will lead to customer's satisfaction, if perceived performance of specific product or services are able to exceed customer's satisfaction*” (Elkhani and Bakri, 2012).

Many factors can be aggravating to the decrease of customer satisfaction when experiencing a service failure, such as severity (the most influential factor), controllability and frequency of service failure. It is crucial for enterprises to invest in selective employee recruitment as well as in training, in order to assure that they present a high quality customer service, controlling service failures and presenting satisfying service recoveries (Yaping *et al.*, 2009; Hoffman *et al.*, 2016). It has been shown that both physical (discounts, gifts, among others) and non-physical (recognition of the failure, apologies, among others) recoveries are equally important, enhancing the fact that service providers should make an effort to seek the best solution adapted to each customer, searching what type of recovery is best for each situation. Furthermore, the strength of the relationship between the customer and the enterprise can also influence the gravity of the service failure in the customer's eyes. The stronger the relationship, the less effort the enterprise has to invest to recover from the service failure. If, on the contrary, the relationship isn't too strong, recovery will be harder to achieve and, preferably, through physical compensation (Yaping *et al.*, 2009). It is therefore advisable for companies to develop strategies to straighten close relationships and ties with customers, so that in the long term they can recover from service failures in a smoother way and, consequently, retain more customers

and increase their satisfaction level. As said by Hoffman *et al.* (2016: 8), “*business is not a perfect science, and every organization needs a service recovery plan*”.

It is also important for enterprises to track and categorize service failures, rather than simply recovering punctually from a failure and moving on. By keeping track of the failures over the time, the enterprise is able to see if there is a pattern in past service, prepare and mitigate similar issues and obtain the tools to understand the causes of those failures, correct them and train their personnel to prevent them from happening and also apply the best recovery strategies instead of letting them figure out the best way out in the moment (Hoffman *et al.*, 2016).

2.5.1 – Demography factors

Studies show that age, gender and ethnicity are some of the demographic factors that can strengthen and ease relationships and interactions, due to the correlation felt by individuals (Lincoln and Miller, 1979; Jones *et al.*, 1998). Hess *et al.* (2010) studied the importance that demographic factors play in service encounters, as it represents the ideal moment to observe the pure and unpredicted interaction between customer and service provider due to the fact that many times the service failure and service recovery happen simultaneously, in real-time. The authors believed that some customers who experienced unsatisfactory levels of service attributed the cause of the failure they experienced to the demographic differences between the service provider and themselves. Their findings showed results related only to the age factor, in which customers who found a larger age gap between themselves and the service provider, perceived the failures as more severe.

2.6 – The Recovery Paradox

The term “paradox” was first used by McCollough and Bharadwaj (1992) to describe situations in which, after a service recovery practiced by the enterprise that produced a service failure, customers’ satisfaction was higher than if the service failure had not occurred in the first place, or in other words higher than the customers who did not experience any failure. In reality, the concept appeared far back, when Etzel and Silverman (1981: 128) stated that “*it may be those who experience the gracious and efficient handling of a complaint who become a company’s best customer*”. Further studies recognize the existence of the *recovery paradox*, noting that it should be given high importance and that service providers should have impeccable service

recovery management, as it affects directly customer satisfaction after a failure and hence influencing the happening of the paradox. Although many acknowledge its existence, the *recovery paradox* is a very rare event to observe, and for researchers to validate its existence, they need to have a large study sample to produce significant results. Thus, and despite everything said above, the evidence mounting to the *service recovery paradox* is mixed, possibly due to a methodological issue caused by the dozen of different approaches made by different authors, or by the fact that the recovery paradox is considered a phenomenon itself, very difficult to observe (Michel *et al.*, 2008).

Assuming the *recovery paradox* does exist, service providers can take advantage of this situation, in order to increase customer loyalty and customer retention, by having a higher control of their service failures and recoveries.

2.6.1 – Distributive Justice, Procedural Justice and Interactional Justice

It is important to understand the meaning of the three dimensions of perceived justice theory due to their importance and role played in cases of service failure.

Distributive justice, based on Homans' (1961) theory of distributive justice, is focused on the perceived fairness that a customer sees regarding the service recovery attempted by the service provider (Blodgett *et al.*, 1993). It all depends heavily on the customers' expectations of what a reasonable recovery is, depending on the failure's gravity and magnitude. Each customer experiences a service failure differently and perceives their failure to be more or less severe. This leads them to have different expectations of a fair recovery for each failure. How the customer perceives the distributive justice depends on the recovery meeting their expectations or not (Hocutt *et al.*, 2006).

Thibault and Walker's (1975) theory of procedural justice was the pillar for Goodwin and Ross's (1992) manipulation of the concept and consequent further use by others, bringing it closer to a service recovery context. Procedural justice focuses on exactly what it describes: procedures. A service provider is expected to have good procedures when providing their service(s) to a customer, like for example giving timely feedback about decisions in a service recovery situation (Hocutt *et al.*, 2006). A service provider that is quick to act, makes on-the-spot decisions and is accessible after a service failure, has a better chance of winning customers' perception of fairness in their procedures than one that doesn't keep its customers up-to-date

on the conflict's resolution and that isn't agile in the recovery. This last hypothesis happens often when unexperienced employees have to fend for themselves when recovering from a service failure, taking longer to arrange the best solution for the customer, eventually leading to additional customer dissatisfaction.

Interactional justice was introduced in 1986 by Bies and Moag (1986: 44) when illustrating customers' sensitivity regarding "the quality of interpersonal treatment they receive during the enactment of organizational procedures". Throughout the late eighties and early nineties, many researchers realized that customers referred to interactional features a lot more than structural ones, such as procedures (Greenberg, 1996). Distributive justice and procedural justice began to fall short on explaining customers' perceived fairness because they didn't regard social interactions in service failures and recoveries. Interactional justice focuses on the whole service recovery interaction, taking into account the social factors, the way customers are treated and their feelings and perceptions. Hocutt *et al.* (2006) base their research on two main interactional factors regarding the service recovery context, empathy and courtesy (2006: 201), as they believe these two factors play a big part in the customer's perception of interactional justice and how they view the encounter's outcome.

2.6.2 – Mixed Findings

Given that there is not a consensus regarding the *recovery paradox* phenomenon, it is pertinent to gather the findings of some of the authors that have studied this subject. Their studies have produced such different conclusions, that same authors have taken different positions at different times regarding the paradox, such as Mary Ann Hocutt (1997; 2006).

Table 5 - Authors' findings on the recovery paradox

Authors	Findings
McCullough, 2000; McCullough <i>et al.</i> , 2000	<i>Recovery paradox</i> can happen if the failure is recoverable
Hocutt <i>et al.</i> , 1997	<i>Recovery paradox</i> can happen if the customer assumes that the failure was his own fault
Maxham and Netemeyer, 2002 a, b	<i>Recovery paradox</i> can happen if the failure happens only once

Bolton and Drew, 1992; Boshoff, 1997; Hocutt <i>et al.</i> , 2006	<i>Recovery paradox</i> can happen if one compares a relatively small group of customers who received an outstanding service recovery with a large group of satisfied customers
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While studying overbooking situations and the impact they have on customer service and service quality, McCollough (2000) concluded that the managements in the hotel industry can overcome overbooking failures and leave customers even more satisfied as if they had never experienced it, by upgrading the same customers to suites with no additional charge when the economy room is unavailable. Having already found in 1997 that a *recovery paradox* was possible in cases which the service failure caused low harm, he defends that occasions in which customers get upgraded to suites due to overbooking, customers' satisfaction would be significantly higher than as if the failure hadn't happened at all. McCollough also highlights the fact that whether the failure had a bigger or smaller impact and made more or less harm depends greatly on the customer, because it all comes down to how he or she perceives the magnitude of the failure and respective recovery from the service provider. Despite all of this, McCollough's research also concludes that although a *recovery paradox* is likely to happen in these specific situations, it is not as if they are "no harm, no foul" situations, as depicted by hotel managements, because customers' opinions depend on "*failure and recovery attributions, perceived interactional justice, and outcome (room) satisfaction*". Meaning that it will always be a hard task to walk out of a service failure looking good (McCollough, 2000).

In a different study, McCollough *et al.* (2000) researched the failure of a 3-hour delay and a \$150 ticket voucher and a "smooth and professional" approach recovery, only to conclude that no evidence to support the *recovery paradox* was found. The authors determined that the magnitude of the failure must be considered and even though the recovery was adequate for the customers and mitigated the failure, it did not completely erase the harm done. Once again, two important factors play their part in the existence or absence of the *recovery paradox*: the impact of the failure and the level of recovery, all through the eyes of the beholder (McCollough *et al.*, 2000).

In addition to finding that whether the customers found the failure and recovery outcomes to be fair influenced their level of satisfaction, Hocutt *et al.* (1997) made another curious finding.

Through an experiment in the restaurant business involving a failure and recovery attempt, the authors were able to observe that if the customers considered the failure to be their own fault and perceived a high interactional justice in the recovery attempt, their post-recovery satisfaction level would be superior to as if the failure had not occurred, confirming the existence of the *recovery paradox*. This finding brought a completely different perspective to the research on this phenomenon, bringing a whole new story of the customers' failure and recovery experience, in which the customers blame themselves for the failure occurrence (Hocutt *et al.*, 1997).

Maxham and Netemeyer (2002), on the other hand, also made an interesting discovery by finding that the *recovery paradox* was prone to happen after a single failure and its satisfactory recovery, but not after a second failure. The damage of a second failure on a customer's satisfaction levels are so deep that not even a satisfactory second recovery could make "paradoxical increases".

The last of the findings illustrated on Table 5 is based on the idea that the *recovery paradox* can happen when comparing a small group of customers that experienced an outstanding recovery to a large group of satisfied customers, supported by several authors such as Boshoff (1997) and Hocutt *et al.* (2006). Boshoff (1997) noted that in his experiment involving a service failure and respective recovery in an airline context, only one scenario out of the total 27 showed evidence of the *recovery paradox*. In that scenario, the customer was quickly offered by the airline supervisor a refund for his/her expenses as well as an additional free airline ticket, rising his initial satisfaction.

Hocutt *et al.* (2006) executed a study on service failure and recovery, experimenting within the restaurant industry and confirming that their results showed partial support for the *recovery paradox*. Considering the best recovery in case of service failure, where the service provider demonstrates "*high redress, high responsiveness, and high empathy/courtesy*", the customer's satisfaction levels seem to be in fact higher than as if the failure hadn't occurred in the first place (2006: 204). The authors also found that the factor with highest influence on the customer's satisfaction levels and word-of-mouth intentions is the service provider's empathy/courtesy, given that in scenarios where the restaurant management was less empathic and courteous, the customer's satisfaction was lower than their initial satisfaction and their negative word-of-mouth intentions were higher.

These are just some of the theories that have, one way or another, supported the existence of the *recovery paradox*. There are several studies investigating this phenomenon, some supporting its existence, some disregarding it, but all of them chose different investigation approaches. Whether it was tested through a survey or an experiment, preferring a cross-sectional or a longitudinal study, different authors tried out different methods. This, added to the fact that the *recovery paradox* itself is a unique and rarely observable phenomenon, justifies why there are so many mixed findings about it.

2.7 - Research question and hypotheses

In order to provide answers to the main research question of this study, “*How can e-retailers improve their service?*”, a number of hypotheses are described in order to be tested.

As the focus of this study is to understand the online consumer and online service failures, data regarding the consumer’s personal, social and demographic characteristics, as well as the consumer’s online behavior and preferences, and everything that might influence the experience of online service failures and consumer’s satisfaction with e-commerce are analyzed.

2.7.1 – Hypotheses regarding e-service failures and consumers’ characteristics

First and foremost, the characterization of the online consumer and their service failure preferences is made alongside their sociodemographic traits. The sociodemographic and personal traits analyzed are gender, age, monthly net income, place of residency, education level and technological abilities. Therefore, the following hypotheses are described:

- H1a – The communication of failures to the e-service company is influenced by the consumer’s age.
- H1b – The communication of failures to the e-service company is influenced by the consumer’s gender.
- H1c – The communication of the failures to the e-service company is influenced by the consumer’s monthly net income.
- H1d – The communication of the failures to the e-service company is influenced by the consumer’s place of residency.

- H1e – The communication of the failures to the e-service company is influenced by the consumer's education level.
- H1f – The communication of the failures to the e-service company is influenced by the consumer's technological abilities.

2.7.2 – Hypotheses regarding e-service failures and online consumers' behavior

The experience of failures and frequency of those failures alongside consumers' online behavior could be different according to the type of products bought, as well as the performance of certain e-commerce criteria such as immediate expedition availability of the product and meeting the delivery deadline, so the following hypotheses are outlined:

- H2 – The experience of delivery failures is influenced by the performance of certain e-commerce criteria.
- H3 – The amount of delivery failures experienced is influenced by the performance of certain e-commerce criteria.
- H4 – The amount of delivery failures experienced is influenced by the type of products bought online.

2.7.3 – Hypotheses regarding the online consumers' satisfaction and behavior

It is also pertinent to analyze consumers' satisfaction level after an online service failure alongside their personal preferences and behavior regarding e-service. Thus, the following hypothesis are described:

- H5 – The consumers' level of satisfaction after a delivery failure is influenced by the performance of e-commerce criteria.
- H6 – The consumers' level of satisfaction after a delivery failure is influenced by the given importance of e-commerce variables.
- H7 – The consumers' level of satisfaction after a delivery failure is influenced by the preferred delivery method.

2.7.4 – Hypotheses regarding the online consumers’ satisfaction and e-service failures

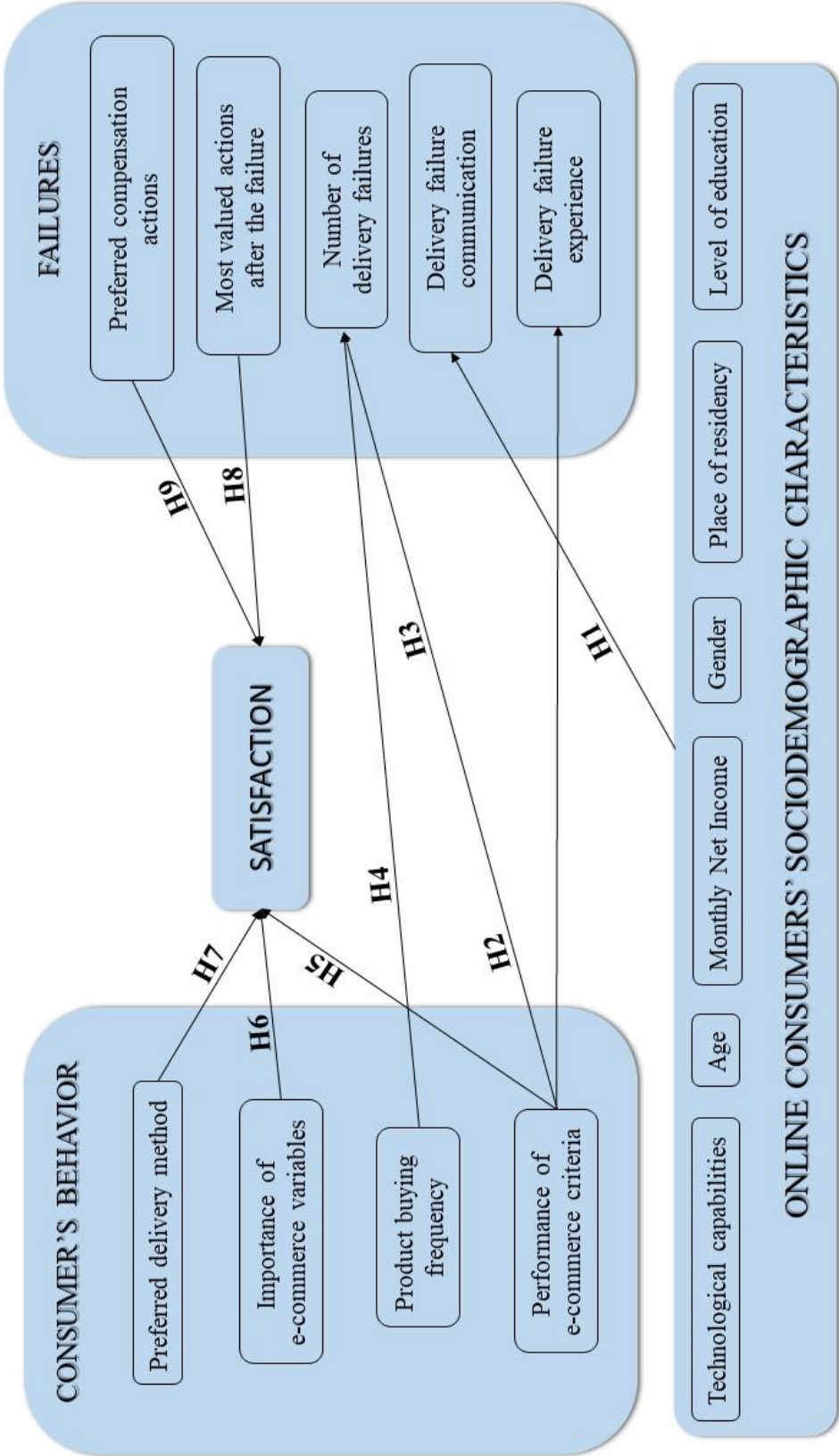
Since consumers’ satisfaction level after an e-service failure highly depends on the nature the failure itself, it is also important to consider the relationship between these two variables. Therefore, H8 and H9 are defined as follows:

- H8 – The consumers’ level of satisfaction after a delivery failure is influenced by the value they give to post-failure actions.
- H9 – The consumers’ level of satisfaction after a delivery failure is influenced by the preference they give to compensation actions.

2.8 – Conceptual Map

A conceptual map is available to facilitate the understanding of the concepts that are being studied in this investigation and how they are related. As Figure 1 shows, there are four main subject areas: online consumers’ sociodemographic characteristics; online consumers’ behavior; online failures; and satisfaction. (Presented in Annex I)

Figure 1 - Conceptual map (hypotheses)



3. Methodology

In this chapter the study methodology will be thoroughly outlined. This study is based on an extensive literature review that complemented the statistical data analysis made to a Portuguese consumer sample. The statistical outputs and the theoretical information allow the understanding of the online consumer and the presentation of areas in which e-retailers could focus on developing or improving.

3.1 – Theoretical Research

Firstly, an approach is made on theoretical concepts that help us understand the subject being studied. Amongst the different concepts, a literature review of the e-commerce concept is made, as well as how it is different from e-business, and the different existing types of transactions. A characterization of the online consumer, a more specific approach about e-commerce in Portugal and the Portuguese online consumer are also briefly reviewed. Afterwards, an analysis of the different perspectives of authors on service failures and service recoveries is made, making it essential to understand the concept of satisfaction as well. At the end of the literature review, an introduction is made to the very debated knowledge about the *service paradox* and the several mixed findings about it from the several authors.

3.2 – Questionnaire

To assess the hypotheses and to the answer the research question, data was collected from a questionnaire, previously structured and applied by a Faculty alumni, Mafalda Galego, in the context of her Master Dissertation in Management, entitled “*Development of E-service in Electronic Retail*” (Galego, 2014). (Annex I)

The questionnaire has 24 questions, and is composed by 5 different subjects as described by Table 6.

Table 6 - Questionnaire structure division

Questionnaire	
<u>Subjects</u>	<u>Number of questions</u>
Respondent characterization	9
Buying process	3
E-service	4
E-service failures	7
Respondents that do not use online stores	1
Total	24

The questionnaire was applied during September of 2014, through a convenience sample limited to the online population. It was disclosed through email to employees from several companies, as well as through Facebook to a non-random sample. The questionnaire had 578 valid answers.

3.3 – Data Analysis

Data is analyzed according to the objectives and research hypotheses. Descriptives, hypotheses' tests and regressions are applied using the statistical software SPSS. The analyses' outputs are presented in Annex II.

For each hypothesis, an adequate analysis is performed. Table 7 presents which statistical test is used per hypothesis or regression analysis and a brief definition of their procedure.

Table 7 - Statistical tests used in this study's hypotheses

Hypotheses	Statistical tests	Procedures
H1a H2 H7	Independent samples t-test	Test for a quantitative variable, it tests the equality of means in two independent groups. For this test, it is necessary that the following assumptions are gathered: the dependent variable should be approximately normally distributed for each group of the independent variable.

		<p>The test statistic is different according to Levene's test for homogeneity of variances. Groups are approximately normal if the group size is bigger than 30 (Central Limit Theorem). Otherwise, the Kolmogorov-Smirnov test for the normality should be applied.</p> <p><u>Levene's test for homogeneity of variances:</u></p> <p>H0: The populations under consideration have equal variances.</p> <p>H1: The population has different variances.</p> <p>If sig.<0.05, the null hypothesis is rejected and it can be concluded that the two populations have different variances.</p> <p><u>Independent samples t-test:</u></p> <p>H0: The population means from the two unrelated groups are equal.</p> <p>H1: The population means from the two unrelated groups are not equal.</p> <p>If sig.<0.05, the null hypothesis is rejected and it can be considered that the population means are not equal.</p>
<p>H1b H1c H1d H1e H1f </p>	<p>Chi-square test</p>	<p>For this test, it is necessary that the following conditions are verified: no more than 20% of the expected value below 5, and no expected value below 1.</p> <p>Chi-square test:</p> <p>H0: The two variables are independent.</p> <p>H1: The two variables are not independent.</p> <p>If sig.<0.05<, the null hypothesis is rejected, so the variables are not related.</p>

<p>H3 H4 H5 H6 H8 H9</p>	<p>Linear regression</p>	<p>For this test, it is necessary that the assumptions of the Multiple Linear Regression Model are gathered: linearity of the relationship between each independent variable X and the dependent variable Y; the mean of the residual component of the model is zero; the independent variables are not correlated with the residual terms; there is no correlation among the residual terms; the variance of the random term is constant; normality of the residuals; there is no correlation among the independent variables X.</p> <p>An independent variable X influences the dependent variable Y if its coefficient is significantly different from zero. Thus, tests to the coefficients B are necessary. For each independent variable X, the hypotheses are:</p> <p>H0: the coefficient is zero. H1: the coefficient is not zero.</p> <p>If $\text{sig} < 0,05$, H0 is rejected and it can be concluded that the variable related with this coefficient influences the dependent variable Y.</p>
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3.4 – Conclusions

Last, but not least, in the final chapter of this thesis the research conclusions can be found. These conclusions derive from the research made previously and describe the answers to the hypotheses and research question.

4. Data Analysis

4.1 – Sociodemographic characterization of the Respondents

It is pertinent to start by characterizing the consumer by comparing two different samples: the consumers that have experienced delivery service failures and the consumers that have not experienced delivery service failures, as well as the complete sample of respondents. This will help analyze and characterize the different types of respondent samples and validate if the differences they have in terms of social and demographic characteristics influence the existence of online service failures.

Comparing these two different consumer samples can help identify important differences between them that might have influence on the subject in analysis. By analyzing both of them separately, it is easier to identify any significant differences, and consequently understand the reason for them.

This comparison is illustrated in Table 8.

Table 8 - Comparison of the sociodemographic data between consumers who have experienced service failures and consumers who have not

		Consumers who <u>have experienced</u> delivery service failures	Consumers who <u>have not</u> <u>experienced</u> delivery service failures	All consumers who <u>use online</u> <u>shops</u> (for shopping and research)
N=		129 (35.1% of 435)	238 (64.9% of 435)	435 (95.8% of 538)
Age	Mean	32.1	32.4	30.3
	Standard deviation	10.6	12.1	12.9
	<21	10.1% (n=13)	8.8% (n=28)	10.1% (n=44)
	21 to 25	19.4% (n=25)	34.5% (n=82)	28.5% (n=124)
	26 to 35	42.6% (n=55)	21% (n=50)	28.5% (n=124)
	36 to 45	14.7% (n=19)	19.3% (n=46)	18.2% (n=79)
	46 to 55	9.3% (n=12)	11.8% (n=28)	10.8% (n=47)
	>56	3.9% (n=5)	4.6% (n=11)	3.9% (n=17)
Gender	Female	55% (n=71)	60.1% (n=143)	58.9% (n=256)
	Male	45% (n=58)	39.9% (n=95)	41.1% (n=179)
Monthly Net Income	<700€	27.9% (n=36)	38.7% (n=92)	35.2% (n=153)
	700€-1400€	35.7% (n=46)	37.8% (n=90)	37.9% (n=165)
	1400€-2100€	20.2% (n=26)	12.2% (n=29)	5.3% (n=23)
	>2100€	16.3% (n=21)	11.3% (n=27)	7.1% (n=31)
Place of Residency	Metropolitan areas	69.8% (n=90)	75.2% (n=179)	73.8% (n=321)
	Rural areas	7% (n=9)	8.8% (n=21)	8.5% (n=37)
	Other cities	23.3% (n=30)	16% (n=38)	17.7% (n=77)
Level of Education	Higher education	91.5% (n=118)	87.4% (n=208)	87.4% (n=380)
	Highschool	8.5% (n=11)	12.2% (n=29)	12.4% (n=54)
	Basic education	N/A	0.4% (n=1)	0.2% (n=1)
Technological Abilities	Very good	32.6% (n=42)	25.6% (n=61)	28.3% (n=123)
	Good	52.7% (n=68)	58% (n=138)	54.7% (n=238)
	Average	13.2% (n=17)	16% (n=38)	15.9% (n=69)
	Bad/very bad	1.6% (2)	0.4% (n=1)	1.1% (n=5)

4.1.1 - Gender

The questionnaire applied by Mafalda Galego for her Master's dissertation (2014) had 578 valid answers, of which 95.8% (n=435) were of consumers that use online shops for both shopping and research, as shown by Figure 1. Of the 435 respondents, almost 59% (n=256) are female and 41.4% (n=179) are male. From the same sample, 35.1% (n=129) were from consumers that have experienced delivery service failures and 64.9% (n=238) were from consumers who have not experienced any of those failures. In both the samples of consumers, more than 50% are female.

4.1.2 - Age

The ages of the sample of online shoppers vary between 14 and 73 years, with an average of 30 years and a standard deviation of 12.9 years. The majority of the respondents, representing 28.5% (n=124), are in the age groups between 21 to 25 years and 26 to 35 years. Only 3.9% (n=17) of the respondents of the questionnaire are older than 56, representing the sample's smallest age group.

Regarding the sample of consumers that have experienced failures (n=129), 42.6% (n=55) are in the age group between 26 and 30 years, representing the largest portion of the sample. The second largest percentage belongs to the age group between 21 and 25 years, representing 19.4% (n=25). In the sample of respondents that have not experienced any delivery service failure it is the exact opposite and the 21 – 25 age group is the most representative with 34.5% (n=82), followed by the 26 – 35 age group with 21% (n=50). The least representative age group in both samples is the group of consumers older than 56 years.

4.1.3 - Monthly Net Income

From the sample of respondents who use online shops, almost 38% (n=165) have a monthly net income between 700€ and 1400€, while 35.2% (n=153) earn less than 700€. 12.4% (n=54) have a monthly net income above 1400€. This means that more than half of the respondent sample earn a value between the first two groups, which extends until 1400€, as shown by Table 8.

From the 129 respondents that have experienced delivery service failures, 35.7% (n=46) earn between 700€ and 1400€, being the most representative income group in the sample. As for the 238 respondents that have not experienced an online failure, the income group with the biggest percentage is the very first, showing that 38.7% (n=92) earn less than 700€, although 37.8% (n=90) of the 238 respondents earn between 700€ and 1400€.

4.1.4 - Place of Residency

Regarding the place of residency of the respondents, about 74% (n=321) are from Lisbon or Porto, cities which represent the Metropolitan Areas. Only 8.5% (n=37) are from Rural Areas. As for both the samples of consumers that have and have not experienced service failures, they both have relatively similar representations of all three categories, given that most the respondents (more than 65% in both cases) are from Metropolitan Areas and less than 10% are from Rural Areas.

4.1.5 - Level of Education

A big portion of the total number of online shopping respondents, namely 87.4% (n=380), have higher education, above high school. Only less than 1% (n=1) have not studied beyond basic education.

From the respondents that have experienced failures, 91.5% (n=118) have higher education, while the remaining 11 respondents have not pursued studies beyond high school. Of the consumers' sample that did not experience failures, 87.4% (n=208) have higher education, 12.2% (n=29) have completed their studies until high school and 0.4% (n=1) did not study further than basic education.

4.1.6 - Technological ability

Table 8 shows that most part of the online shopping respondents have technological abilities above average and 54.7% (n=238) classify their technological abilities as good. 28.7% (n=123) say their technological abilities are very good.

In the two samples of respondents that have and have not experienced delivery service failures, most of them state that they have good technological abilities and more than 25%, in both cases, claim they have very good technological abilities. Less than 20% think they have average technological skills and an insignificant number have bad or very bad technological skills.

4.2 – Online shoppers

Regarding the use of online stores, 78.5% (n=454) of the respondents say they use them.

Of the 454 respondents that use online stores, only 4.2% (n=19) use them only for research purposes. All the other respondents use online stores for shopping (8.1%, n=37) and for both research and shopping (87.7%, n=398).

This means that a total amount of 435 respondents use online stores for shopping.

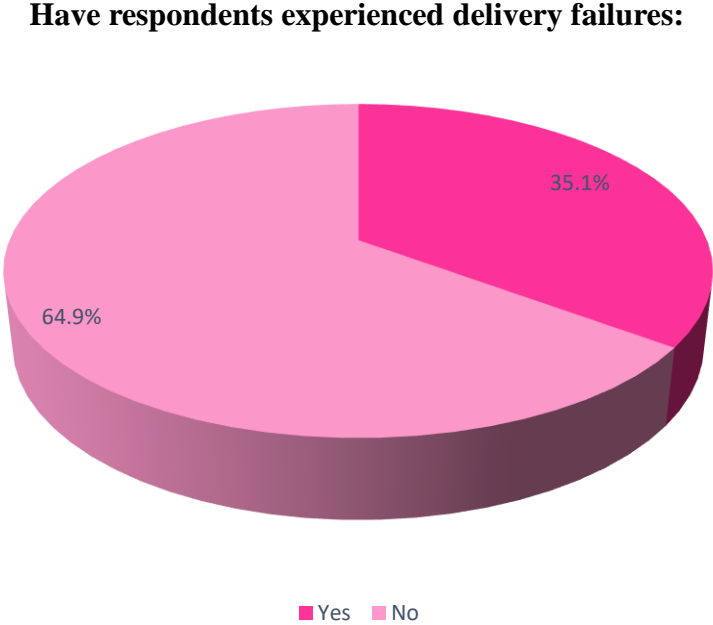
Figure 2 - Distribution of the respondents regarding the Use of Online Shops



4.2.1 – Delivery service failures

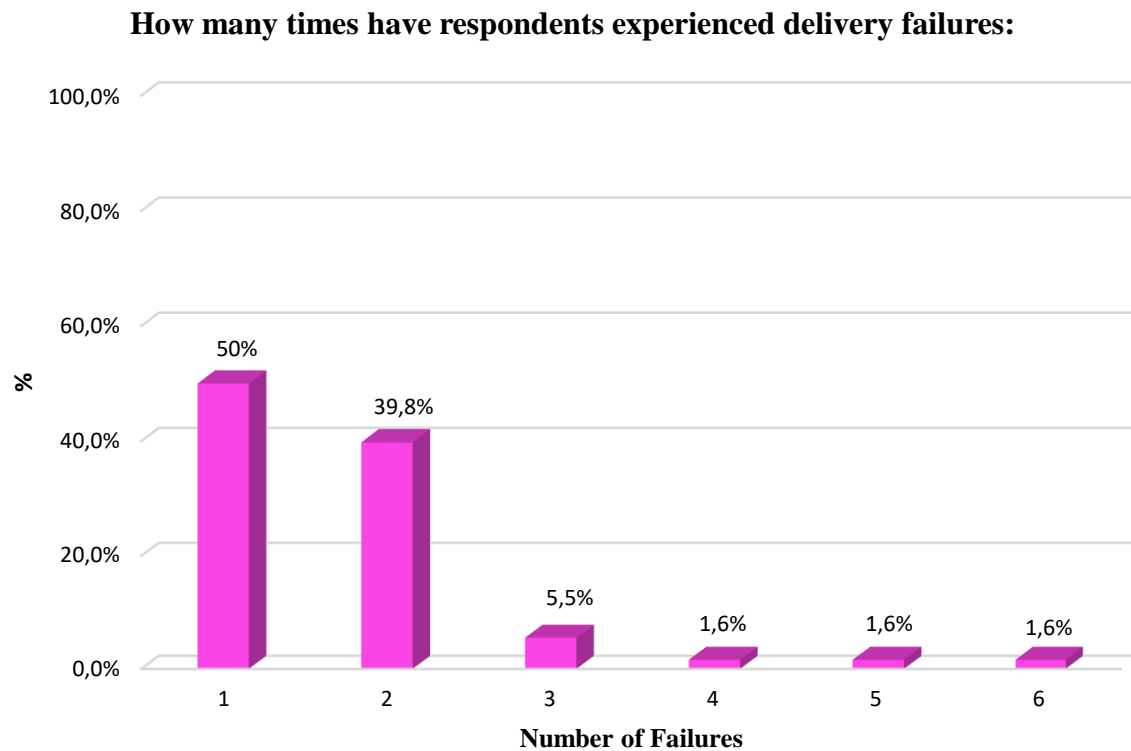
Most of the respondents have not experienced any online delivery failure, yet a large 35% (n=129) have, as shown by Figure 3.

Figure 3 – Distribution of experience of Online Delivery Failures



For the respondents who have experienced online delivery failures, half of them (n=64) have experienced only one, while 39.8% (n=51) have experienced two. The remaining 10.2% (n=13) of respondents claimed to have experienced at least three online delivery failures.

Figure 4 - Distribution of delivery failure experience



4.2.2 - Online preferences and behavior

The respondents of the questionnaire were asked to evaluate how often, from a scale of 1 (never) to 5 (frequently), certain products they bought online. The products that are most bought online by consumers are clothes and accessories (M=2.78; SD=1.39), followed by accessories for electronic products (ex: cellphone cases, headphones) (M=2.62; SD=1.42). The third most bought products are books (M=2.52; SD=1.32), like Table 9 shows.

Table 9 – Distribution of shopping frequency of products

		Consumers who have experienced delivery service failures	Consumers who have not experienced delivery service failures	Total Respondents
	N	129	238	418
Clothes and Accessories	Mean	2.71	2.86	2.78
	Std. Deviation	1.38	1.40	1.39
House products (ex: furniture, decoration)	Mean	1.54	1.45	1.50
	Std. Deviation	0.85	0.85	0.88
Food and consumer products	Mean	1.81	1.65	1.71
	Std. Deviation	1.24	1.15	1.17
CD's, DVD's and console games	Mean	2.07	1.85	1.98
	Std. Deviation	1.35	1.21	1.29
Books (except digital formats)	Mean	2.83	2.39	2.52
	Std. Deviation	1.36	1.26	1.32
Electronic products (ex: smartphones, gadgets, household appliances)	Mean	2.72	2.28	2.45
	Std. Deviation	1.32	1.29	1.34
Accessories for electronic products (ex: cellphone cases, headphones)	Mean	2.88	2.50	2.62
	Std. Deviation	1.48	1.39	1.42
Cosmetics	Mean	1.61	1.66	1.63
	Std. Deviation	0.98	1.05	1.02
Car/Motorbike products	Mean	1.47	1.31	1.38
	Std. Deviation	0.88	0.71	0.80
Other	Mean	1.74	1.49	1.57
	Std. Deviation	1.33	1.16	1.22
Valid N (listwise)		129	238	418

As for consumers who have experienced delivery service failures, the products that are most bought online are accessories for electronic products ($M=2.88$; $SD=1.47$), followed by books ($M=2.83$; $SD=1.36$). The third most bought products by this respondent sample are electronic products (ex: smartphones, gadgets, household appliances) ($M=2.72$; $SD=1.32$). The least bought products by all the respondents are cars and motorbike products. However, those who have not experienced delivery service failures buy more frequently clothes and accessories ($M=2.86$; $SD=1.40$).

Respondents were also asked to classify, according to their shopping experience, the performance of certain online shopping criteria, from a scale of 1 (very good) to 6 (very bad). Table 10 compares, once more, the two different samples of respondents that have experienced delivery service failures and those who have not. For both respondent samples, the best evaluated online criteria according to its performance is the Privacy and Security on Purchase. The second best evaluated online shopping criteria, for respondents who have experienced delivery service failures is the Immediate Expedition Availability of the Product (product in stock) (M=2.13; SD=0.87), followed by the Site's Ease of Use (M=2.15; SD=0.79). For consumers who have not experienced online service failures, the second best evaluated criteria is Meeting the Delivery Deadline (M=1.82; SD=0.70), followed by the Immediate Expedition Availability of the Product (product in stock) (M=1.90; SD=0.80). For the consumers that have experienced delivery failures, the Guarantees of Compensation and Liability for Delivery Problems is the worst evaluated criteria according to its performance (M=2.44; SD=1.33).

Table 10 – Distribution of performance of online shopping criteria

		Consumers who have experienced delivery service failures	Consumers who have not experienced delivery service failures	Total Respondents
	N	129	238	370
Immediate expedition availability of the product (product in stock)	Mean	2.13	1.90	1.98
	Standard Deviation	0.87	0.80	0.84
Meeting the delivery deadline	Mean	2.24	1.82	1.97
	Standard Deviation	1.05	0.71	0.87
Site's ease of use	Mean	2.15	2.03	2.08
	Standard Deviation	0.79	0.80	0.80
Site's design	Mean	2.44	2.35	2.39
	Standard Deviation	0.88	0.80	0.84
Quality of product information available on the site	Mean	2.39	2.28	2.32
	Standard Deviation	0.90	0.97	0.94
	Mean	1.77	1.70	1.73

Privacy and Security on Purchase	Standard Deviation	0.83	0.70	0.76
Guarantees of compensation and liability for delivery problems	Mean	2.44	2.26	2.32
	Standard Deviation	1.33	1.12	1.18
Valid N (listwise)		129	238	370

As for the classification of delivery service variants according to their importance, respondents were asked to classify them from 1 (very important) to 6 (not important at all). For both samples, as illustrated by Table 11, the most important online delivery service variant is getting the Right Product and in Good Conditions. Consumers who have experienced online service failures value, secondly, the Delivery Time (M=1.34; SD=0.54), while consumers who have not experienced any failures value the Service Price (M=1.37; SD=0.59) more.

The least valued online delivery service component by consumers who have experienced failures is the product Availability in Stock (M=1.64; SD=0.684), while for the others it is the Ease of Communication with the Delivery Provider (M=1.66; SD=0.76).

Table 11 – Distribution of importance of online delivery service variants

		Consumers who have experienced delivery service failures	Consumers who have not experienced delivery service failures	Total Respondents
	N	129	238	367
Delivery place	Mean	1.37	1.39	1.39
	Standard Deviation	0.60	0.63	0.62
Delivery time	Mean	1.34	1.38	1.37
	Standard Deviation	0.54	0.57	0.56
Availability in stock	Mean	1.64	1.63	1.63
	Standard Deviation	0.68	0.76	0.73
Ease of communication with the delivery provider	Mean	1.57	1.66	1.63
	Standard Deviation	0.77	0.76	0.76
Service price	Mean	1.44	1.37	1.40
	Standard Deviation	0.72	0.59	0.64
	Mean	1.13	1.16	1.15

Right product and in good conditions	Standard Deviation	0.36	0.40	0.39
Valid N (listwise)		129	238	367

Online delivery service at home is the most preferred delivery method by all respondents, representing in both respondent sample cases more than 85%.

Table 12 – Distribution of preferred delivery method

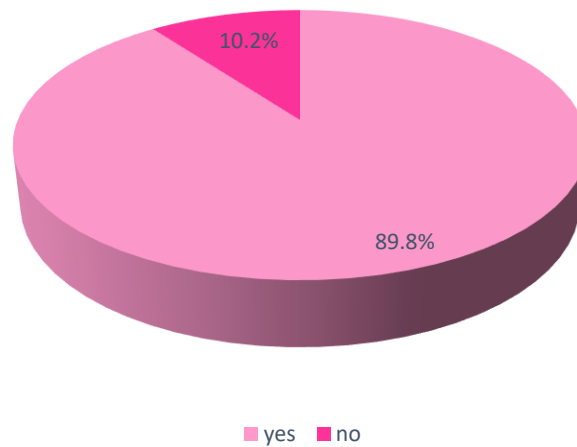
		Consumers who have experienced delivery service failures	Consumers who have not experienced delivery service failures	Total Respondents
	N	129	238	367
Collection of the Product in a Store	N	14	34	48
	Percentage	10.9%	14.3%	11%
Delivery of the Product at Home	N	115	204	319
	Percentage	89.1%	85.7%	73.3%

4.2.3 – Consumers' behavior regarding delivery service failures

As illustrated by Figure 5, almost 90% (n=115) of the respondents that have experienced online delivery failures reported them to the online store company, leaving a remaining 10.2% (n=13) of respondents who did not provide any feedback of the failure to the company.

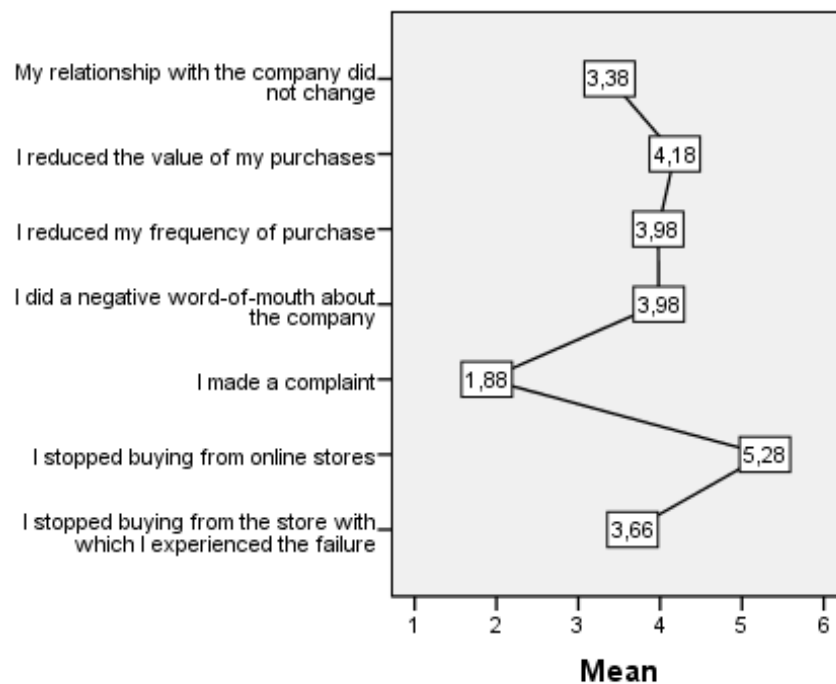
Figure 5 – Distribution of communication of the Failure to the Company

Did the respondents communicate the failure to the e-retailer?



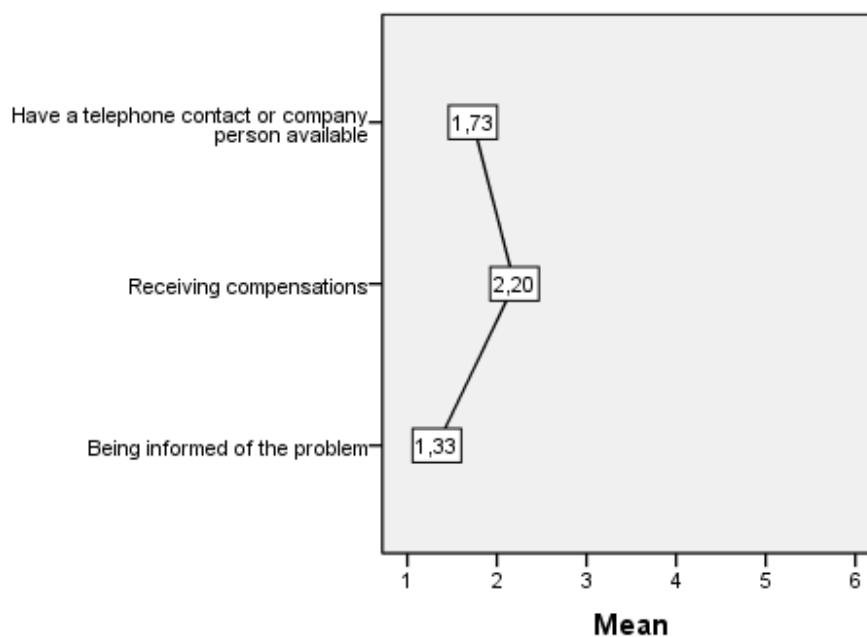
Consumers who have experienced online delivery failures were asked to classify several measures by amount of use upon a failure occurrence, from a scale of 1 (always) to 6 (never). As shown by Figure 6, which tells us the mean distribution of the measures taken by the consumers, the most used measure is the Complaint (M=1.88; SD=1.45). Respondents also answered that a usually their Relationship with the Company did not Change after the failure (M=3.38; SD=1.78), although also claimed that they Stopped Buying from the Store with which they experienced the failure (M=3.66; SD=1.78). The least taken measure by consumers is Stop Buying from the Online Stores (M=5.28; SD=1.25).

Figure 6 – Distribution of frequency of measures taken by Consumers upon a Failure Occurrence



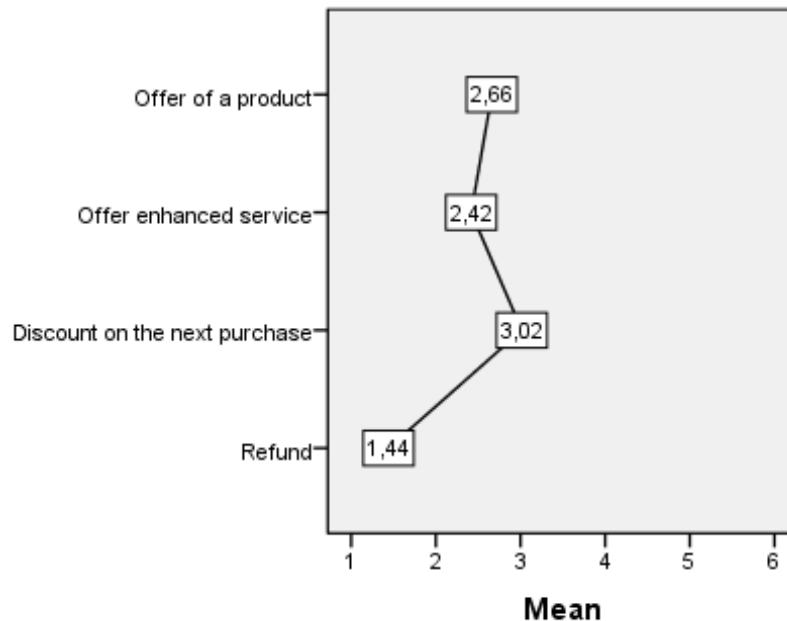
Regarding the most valued measures by consumers upon a failure occurrence, as shown by Figure 7, the most valued measure is Being Informed of the Problem (M=1.33; SD=0.603). The least valued measure by most respondents is Receiving Compensations (M=2.20; SD=1.32).

Figure 7 – Distribution of Most Valued Measures by Consumers Upon a Failure Occurrence



Respondents were also asked to classify four compensation actions according to their preference, on a scale from 1 (the most valued) to 6 (the least valued). Figure 8 shows the results of this question.

Figure 8 – Distribution of Compensation Actions by Consumers' Preference



The most preferred compensation action by consumers is receiving a Refund ($M=1.44$; $SD=1.84$), while the Discount on the next Purchase ($M=3.02$; $SD=1.59$) is the least preferred compensation action.

4.2.4 - Satisfaction

As shown by Figure 9, 53.1% of the respondents ($n=68$) who have experienced one or more online failures, claim they are, overall, very satisfied with online shopping and 29.7% ($n=38$) are satisfied. A fair number of respondents ($n=21$; 16.4%) also affirm they are immensely satisfied with online shopping.

This information might be paradoxical by the fact that all these satisfied, very satisfied and immensely satisfied respondents have experienced one or more online service failures.

Figure 9 - Distribution of Level of Satisfaction after a Failure



4.3 – Validation of hypotheses

As indicated by Table 7, specific statistical tests were performed for each one of the hypotheses testing.

SPSS outputs from the hypotheses whose coefficients are statically non-significant for this study's purpose are available in the Annexes. Since their results are only briefly mentioned in this chapter.

4.3.1 – Hypothesis regarding e-service failures and consumers' characteristics

Hypothesis 1 (H1) analyzes the possible influence that consumers' social and demographic characteristics might have on the communication of the failures to the e-service provider. Testing the hypotheses statistically through SPSS, the outputs represent statically non-significant results, as you can see in Table 21 of Annex II.

4.3.2 – Hypotheses regarding e-service failures and online consumers' behavior

Hypothesis 2 (H2) analyzes the influence, or absence of it, that the performance of certain e-commerce criteria evaluated by consumers might have on the experience of delivery failures.

Since the types of failures being studied throughout this investigation are delivery service failures, only delivery-related e-commerce criteria were considered. The independent-samples t-test was performed to validate the hypothesis, resulting in the outputs summarized in Table 13. Given the fact that both groups have a population sample above 30, the Assumption of Normality is confirmed according to the Central Limit Theorem.

Table 13 - Summarized results from statistical tests applied to verify validity of H2

H2 – The experience of delivery service failures is influenced by the performance of e-commerce criteria				
Hypothesis	E-commerce criteria	Levene's Test	t	Conclusion
H2	Immediate expedition availability of the product (product in stock)	0.034	2.186*	Consumers who have experienced failures gave this criterion a worst evaluation than consumers who have not experienced failures
	Meeting the delivery deadline	13.509*	3.859*	Consumers who have experienced failures gave this criterion a worst evaluation than consumers who have not experienced failures
	Guarantees of compensation and liability for delivery problems	3.879*	1.318	The experience of failures is not influenced by the performance of e-commerce criteria
*p<0.05				

Hypothesis 3 (H3) analyses the relationship between two variables: the amount of failures experienced by consumers and the performance of certain e-commerce criteria. Similarly to hypothesis 2, only delivery-related e-commerce criteria were considered. To better understand this relationship, a multiple regression analysis is used. Its summarized results are presented in Table 14.

Table 14 - Summarized results from statistical tests applied to verify validity of H3

H3 -The amount of delivery failures experienced is influenced by the performance of e-commerce criteria					
Hypothesis	E-commerce criteria	β	Beta	t	Conclusion
H3	Immediate expedition availability of the product (product in stock)	0.117	0.106	1.118	The amount of failures is not influenced by the performance of this criterion
	Meeting the delivery deadline	-0.008	-0.091	-0.009	The amount of failures is not influenced by the performance of this criterion
	Guarantees of compensation and liability for delivery problems	0.148	0.066	0.027*	Consumers who have experienced failures gave this criterion a worst evaluation than consumers who have not experienced failures
*p<0.05					

According to the results of the linear regression analysis, the criterion *Guarantees of compensation and liability for delivery problems* positively influences the amount of failures the consumers experience. This relationship can be interpreted as: if *Guarantees of compensation and liability for delivery problems* increases by 1, then the amount of failures will increase by 0.148. It is also pertinent to remind that in the questionnaire consumers are asked to evaluate the performance of these criteria on a scale from 1 to 6, in which 1 corresponds to Very good and 6 to Very bad, which means that an increase of the criteria represents a negative relationship, as it nearer to 6 (Very bad).

Hypothesis 4 (H4) is tested using a multiple linear regression analysis as well, as it states: The amount of failures experienced is influenced by the shopping frequency of products. The summarized results of this test are outlined in Table 15.

Table 15 - Summarized results from statistical tests applied to verify validity of H4

H4 – The amount of delivery failures experienced is influenced by the shopping frequency of products					
Hypothesis	E-commerce criteria	β	Beta	t	Conclusion
H4	Clothes and Accessories	0.063	0.091	0.941	The amount of failures is not influenced by the frequency of products bought online
	House products (ex: furniture, decoration)	0.165	0,146	1.540	The amount of failures is not influenced by the frequency of products bought online
	Food and consumer products	0,002	0,002	0.026	The amount of failures is not influenced by the frequency of products bought online
	CD's, DVD's and console games	0,14	0,202	1.989*	The amount of failures is influenced by the frequency of purchase of this criterion
	Books (except digital formats)	-0,030	-0,043	-0.464	The amount of failures is not influenced by the frequency of products bought online
	Electronic products (ex: smartphones, gadgets, household appliances)	0,121	0,168	1.602	The amount of failures is not influenced by the frequency of products bought online
	Accessories for electronic products (ex: cellphone cases, headphones)	0,036	0,055	0.521	The amount of failures is not influenced by the frequency of products bought online
	Cosmetics	-0,067	-0,068	-0.723	The amount of failures is not influenced by the frequency of products bought online
	Car/Motorbike products	0,056	0,051	0.549	The amount of failures is not influenced by the frequency of products bought online
	Other	0,112	0,156	1.824	The amount of failures is not influenced by the frequency of products bought online
*p<0.05					

Only the shopping frequency of CD's, DVD's and console games influence the amount of failures, although its influence is weak ($\beta=0.143$; $p=0.049$).

4.3.3 – Hypotheses regarding online consumers' satisfaction and behavior

The first hypothesis that is formulated to study this relationship is **Hypothesis 5**, which analyses the influence that the performance of certain e-commerce criteria might have, or not, in the consumers' level of satisfaction after having experienced a delivery failure. The validity of this hypothesis is tested using a multiple linear regression analysis, and the summarized results can be seen in Table 16.

Table 16 - Summarized results from statistical tests applied to verify validity of H5

H5 – The consumers' level of satisfaction after a delivery failure is influenced by the performance of e-commerce criteria					
Hypothesis	E-commerce criteria	β	Beta	t	Conclusion
H5	Immediate expedition availability of the product (product in stock)	0,204	0,256	2.790*	Consumers' level of satisfaction after a failure is influenced by the performance of this criterion
	Meeting the delivery deadline	-0,023	-0,034	-0.359	Consumers' level of satisfaction after a failure is not influenced by the performance of this criterion
	Guarantees of compensation and liability for delivery problems	0,122	0,234	2.650*	Consumers' level of satisfaction after a failure is influenced by the performance of this criterion
* $p<0.05$					

The results from this test show that the performance of the e-commerce criteria *Immediate expedition availability of the product (product in stock)* and *Guarantees of compensation and liability for delivery problems* have influence on consumers' level of satisfaction, and their statistical relations can be translated into the following:

- If the evaluation of the performance of *Immediate expedition availability of the product (product in stock)* increases by 1, consumers' satisfaction increases by 0.204.
- If the evaluation of the performance of *Guarantees of compensation and liability for delivery problems* increases by 1, consumers' satisfaction increases by 0.122.

It is pertinent to remind that the performance evaluation works on a scale from 1 to 6, in which 1 is Very good and 6 is Very bad. This means that increasing the evaluation of the performance of any of the criteria is worsening it.

Hypothesis 6 analyses whether the consumers' level of satisfaction after a service failure is influenced by the actions taken by the service provider they value after a failure happens. To test this hypothesis' validity, a linear regression is used, of which you can see the results on Table 17.

Table 17 - Summarized results from statistical tests applied to verify validity of H6

H6 – The consumers' level of satisfaction after a failure is influenced by the value they give to post-failure action					
Hypothesis	E-commerce criteria	β	Beta	t	Conclusion
H6	Being informed of the problem	-0.051	-0.045	-0.465	Consumers' level of satisfaction after a failure is not influenced by the value they give to this criterion
	Receiving compensations	-0.095	-0.182	-2.000*	Consumers' level of satisfaction after a failure is influenced by the value they give to this criterion
	Have a telephone contact or company person available	-0.005	-0.007	-0,75	Consumers' level of satisfaction after a failure is not influenced by the value they give to this criterion
*p<0.05					

The results of this statistical analysis show that the variable that influences consumers' level of satisfaction after a failure is *Receiving compensations*. This statistical relation can be translated in the following:

- If consumers' appreciation of *Receiving compensations* increases by 1, their level of satisfaction increases by -0.095.

Once again, the appreciation scale is from 1 to 6, where 1 is *The most valued* and 6 is *The least valued*, which means that increasing it is giving the criteria less value.

Hypothesis 7 (H7) analyses whether the consumers' level of satisfaction is influenced by their preferred delivery method. Testing the hypotheses statistically through SPSS, the outputs represent statically non-significant results, as you can see in Tables 37 and 38 of Annex II.

4.3.4 – Hypotheses regarding online consumers' satisfaction and e-service failures

Hypothesis 8 (H8) and **Hypothesis 9 (H9)** analyse whether the consumers' post-failure level of satisfaction is influenced both by the value they give to post-failure actions and by the preference they give to compensation actions, respectively. Testing the hypotheses statistically through SPSS, the outputs represent statically non-significant results, as you can see in Tables 39 to 40 of Annex II for Hypothesis 8, and in Tables 42 to 45 of Annex II for Hypothesis 9.

4.4 – Summarized results from the hypotheses

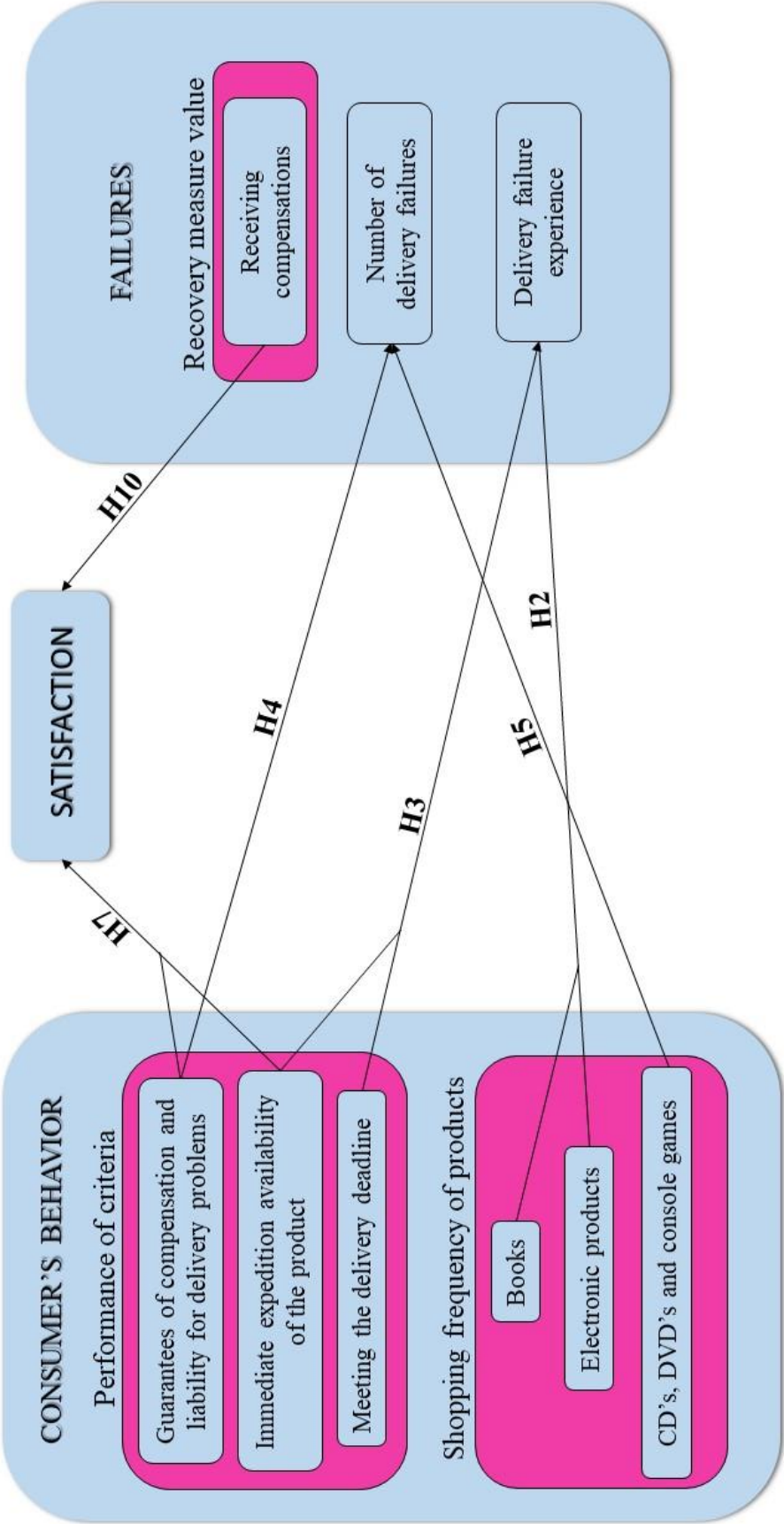
To conclude this chapter of data analysis, a review is made in Table 18 and Figure 10, in which the summarized results of the hypotheses testing are presented.

Table 18 - Summarized results of the hypotheses testing

Hypothesis	Statistical test	Conclusion	Annexes
H1a – The communication of failures to the e-service company if influenced by the consumers' age.	Independent samples t-test	<i>Age</i> does not influence the communication of delivery failures	Table 21
H1b – The communication of failures to the e-service company if influenced by the consumers' gender.	Chi-square test	<i>Gender</i> does not influence the communication of delivery failures	Table 21
H1c – The communication of failures to the e-service company if influenced by the consumers' monthly net income.	Chi-square test	<i>Monthly net income</i> does not influence the communication of delivery failures	Table 21
H1d – The communication of failures to the e-service company if influenced by the consumers' place of residency.	Chi-square test	<i>Place of residency</i> does not influence the communication of delivery failures	Table 21
H1e – The communication of failures to the e-service company if influenced by the consumers' level of education.	Chi-square test	<i>Level of education</i> does not influence the communication of delivery failures	Table 21
H1f – The communication of failures to the e-service company if influenced by the consumers' technological abilities.	Chi-square test	<i>Technological abilities</i> do not influence the communication of delivery failures	Table 21
H2 – The experience of delivery failures is influenced by the performance of e-commerce criteria.	Independent samples t-test	The performance of certain e-commerce criteria influence the experience of delivery failures, namely: <i>immediate expedition availability of the product</i> ; and <i>meeting the delivery deadline</i> .	Tables 22-23
H3 – The amount of delivery failures experienced is influenced	Linear regression	The performance of the <i>Guarantees of compensation and</i>	Tables 24-26

by the performance of e-commerce criteria.		<i>liability for delivery problems</i> influences the amount of delivery failures experienced	
H4 – The amount of delivery failures experienced is influenced by the shopping frequency of products.	Linear regression	The shopping frequency of <i>CD's, DVD's and console games</i> influence the amount of delivery failures experienced	Tables 27-29
H5 – The consumers' level of satisfaction after a delivery failure is influenced by the performance of e-commerce criteria.	Linear regression	The performance of certain e-commerce criteria influences the consumers' post-failure satisfaction level, namely: <i>immediate expedition availability of the product</i> ; and <i>guarantees of compensation and liability for delivery problems</i>	Tables 30-32
H6 – The consumers' level of satisfaction after a delivery failure is influenced by the given importance of e-commerce variables.	Linear regression	Consumers' level of satisfaction after a delivery failure is not influenced by the importance they give to e-commerce variables	Tables 33-36
H7 – The consumers' level of satisfaction after a delivery failure is influenced by the preferred delivery method.	Independent samples t-test	The <i>preferred method of delivery</i> does not influence consumers' satisfaction level.	Tables 37-38
H8 – The consumers' level of satisfaction is influenced by the value they give to post-failure actions.	Linear regression	Consumers' level of satisfaction after a delivery failure is influenced by the value they give to <i>Receiving compensations</i>	Tables 39-41
H9 – The consumers' level of satisfaction after a delivery failure is influenced by the preference they give to compensation actions.	Linear regression	Consumers' level of satisfaction after a delivery failure is not influenced by the preference they give to compensation actions	Tables 42-45

Figure 10 - Results from hypotheses testing



5. Conclusions

Taking a few steps back to the beginning of this study, where the context was outlined, as well as its objectives and its purpose, it is also pertinent to remind that its main goal is to study online consumers' behavior, linking their shopping preferences to their sociodemographic characteristics. One of the important focuses of this study is the understanding of consumer satisfaction after having experienced one or more service failures. This specific subject is particularly useful for service providers and for companies, as they can use it to learn more about their consumers' preferences and how to avoid their dissatisfaction, especially when it comes to service failures.

This chapter presents the main conclusions and ends with the outlining of the limitations that were experienced during this study.

5.1 – Main conclusions

Presenting guarantees of compensation and liability for delivery problems is not the most valued action by the consumer. This conclusion is in line with the fact that receiving compensations is the least valued action and being informed of the problem is the most valued one. It is also possible to conclude that the less consumers value the receipt of compensations, the less satisfied they are, which can mean that e-retailers are recovering from failures through compensation actions. Although we have concluded before that consumers' satisfaction with online shopping is not influenced by the receipt of compensation actions, the one they prefer the most is receiving a refund.

Even though the performance of guarantees of compensations and liability for delivery problems is not the most valued variable by the consumer, it influences the amount of delivery failures experienced. The less guarantees of compensation are presented by service providers, the more frequently delivery failures are prone to happen. This information can show that e-retailers that do not offer guarantees of compensation and liability are not investing enough in guaranteeing successful deliveries.

The products with which the most frequent delivery failures happen are accessories for electronic products, books (except digital formats) and electronic products. These are the three most purchased products by consumers who have experienced one or more failures in delivery, as well as the products in which there is a bigger purchasing frequency difference between consumers who have experienced failures and those who have not.

However, one other product category proved to be statistically relevant regarding the amount of delivery failures experienced. Consumers who purchase more CD's, DVD's and console games are more susceptible to experiencing more frequent delivery failures.

Consumers who have experienced delivery failures also have a worst evaluation of two e-service criteria: immediate expedition availability of the product (product in stock); and meeting the delivery deadline. These two factors have a strong influence on the experience of delivery failures and are also linked to each other. If a product is not available for immediate expedition, there is a possibility that the service provider will not be able to meet the delivery deadline communicated to the consumer, thus leading to a delivery failure. It is therefore important for e-retailers to give especial attention to the causes that can provoke delays in delivery deadlines, since they are a cause of consequent consumer dissatisfaction.

As mentioned previously, the unavailability of a product for immediate expedition is many times considered a service failure by consumers and can cause failure to meet delivery deadlines. However, the relation between satisfaction and immediate expedition availability of the product can be an indicator of support of the *recovery paradox*, as it shows that even if the performance of immediate expedition availability of the product worsens, consumers' satisfaction will increase. Recalling the *recovery paradox* concept, it states that there are cases in which consumers end up more satisfied after a recovery strategy than if they hadn't experience a failure in the first place. Consumers presenting a high satisfaction level even after products are not available for expedition can mean that there is an unknown factor, or factors, that strongly influences their satisfaction, such as a successful recovery. Furthermore, from the consumers who have experienced at least one delivery failure, only 1% said to be unsatisfied with online shopping, whilst almost 70% were very satisfied or immensely satisfied, the two highest satisfaction levels.

5.2 – Limitations

Throughout the course of this investigation, three limitations were identified:

- The use of convenience sampling does not allow this investigation's results to be used as representative of the Portuguese population;
- The data collection was performed virtually, which does not enable to verify the conditions and authenticity of respondents' answers;
- Having worked with an existent database, this study was limited to its structure and results.

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Annex I - Questionnaire

The following questionnaire is part of the dissertation of a Master's degree in Management from ISCTE-IUL. Its objective is to understand online consumers' behavior and their satisfaction level regarding the products' delivery service. The questions in this questionnaire refer to shopping in online shops, **excluding ads websites** (e.g. OLX, Coisas, Standsvirtual, etc.)

The participation in this questionnaire takes about 5 minutes and its results are confidential and are destined only for the statistical analysis of this investigation.

Consumer

1. Age:

2. Gender:

Female Male

3. Monthly Net Income:

<=700€ >700€-1400€ >1400€-2100€ >2100€-2800€ >2800€

4. Place of residency:

Metropolitan areas Other city Rural area

5. Education level:

Basic education High school Higher education

6. How do you classify your technological abilities?

Very good Good Average Bad Very Bad

7. Do you use online shops?

Yes No

8. You use online shops for:

Only Research Shopping Both

9. If you use them for research, describe your behavior

	1 – Describes my behavior completely	2	3	4	5	6 – Doesn't describe my behavior at all
I search products to keep myself up-to-date						
I search products to take advantage of online promotions						

I search products to compare prices						
I search for product information that I want to buy in physical stores						

Online shopping process

10. On average, how many times to you shop online within 6 months?

<3 3-5 5-10 10-15 >15

11. How frequently do you purchase the following products online?

	1 - Never	2	3	4	5 - Frequently
Clothes and Accessories					
House products (ex: furniture, decoration)					
Food and consumer products					
CD's, DVD's and console games					
Books (except digital formats)					
Electronic products (ex: smartphones, gadgets, household appliances)					
Accessories for electronic products (ex: cellphone cases, headphones)					
Cosmetics					
Car/Motorbike products					
Other					

12. Select the agreeance level with the following statements

	1 – I totally agree	2	3	4	5	6 – I totally disagree
I don't like going to big commercial areas						
I don't like things that require effort						
It's convenient to buy from home						
I don't like to waste time shopping						
I don't like to waste time collecting product information						
I like to take risks						
I like trying new ways of doing things						

Normally I take an interest in new products						
Normally I only buy products that are on sale						
I research prices a lot of times						
Normally I buy branded products						
All brands are the same						
I like to compare the characteristics of different products						
I like to have as much information as I can about the product I'm going to buy						

Online service quality

13. Classify the following hypotheses according to their importance

	1 – Very important	2	3	4	5	6 – Not important at all
Immediate expedition availability of the product (product in stock)						
Meeting the delivery deadline						
Site's ease of use						
Site's design						
Quality of product information available on the site						
Privacy and Security on Purchase						
Guarantees of compensation and liability for delivery problems						

14. Evaluate the performance of the following criteria according to your online shopping experience

	1 – Very good	2	3	4	5	6 – Very bad
Immediate expedition availability of the product (product in stock)						
Meeting the delivery deadline						
Site's ease of use						
Site's design						

Quality of product information available on the site						
Privacy and Security on Purchase						
Guarantees of compensation and liability for delivery problems						

15. Classify the following delivery service variants according to their importance

	1 – Very important	2	3	4	5	6 – Not important at all
Delivery place						
Delivery time						
Availability in stock						
Ease of communication with the delivery provider						
Service price						
Right product and in good conditions						

16. Which method of delivery do you prefer?

Collection of the product in a store Delivery of the product at home

Failure

17. Have you ever experienced a failure in the delivery of your online purchases?

Yes No

18. If so, how many times?

19. Did you report the failure to the online store company?

Yes No

20. What measures did you take when the failure occurred?

	1 – Always	2	3	4	5	6 - Never
I stopped buying from the store with which I experienced the failure						
I stopped buying from online stores						
I made a complaint						
I did a negative word-of-mouth about the company						

I reduced my frequency of purchase						
I reduced the value of my purchases						
My relationship with the company did not change						

21. How satisfied are you overall with online shopping?

Immensely satisfied, Very satisfied, Satisfied, Not very satisfied, Unsatisfied, Very unsatisfied

22. When a delivery failure occurs, what are the actions you value the most?

	1 – The most valued	2	3	4	5	6 – The least valued
Being informed of the problem						
Receiving compensations						
Have a telephone contact or company person available						

23. Classify the compensation actions according to your preference

	1 – The most valued	2	3	4	5	6 – The least valued
Refund						
Discount on the next purchase						
Offer enhanced service						
Offer of a product						

Consumer that does not use online shops

24. From the following statements, choose the 3 that most identify with you.

- I do not trust the privacy and security criteria of online shopping sites
- I shop as a recreation or socializing activity
- I do not like to buy products without seeing them physically or trying them
- When I shop, I prefer immediate ownership of the product regardless of the time and effort it requires
- I do not trust the product delivery process (e.g. timely delivery, scheduled delivery place)
- Other

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Annex II - Data Analysis

1. Online shoppers – consumers' behavior

Table 19 - Distribution of Respondents by Use of Online Shops (N=Total Respondents)

		Frequency	Percent	Valid Percent
Valid	Yes	454	78,5	78,5
	No	124	21,5	21,5
	Total	578	100,0	100,0

Table 20 - Distribution of Respondents by Type of Online Shopping (N=Respondents who use online shops)

		Frequency	Percent	Valid Percent
Valid	Only Research	19	4,2	4,2
	Shopping	37	8,1	8,1
	Both	398	87,7	87,7
	Total	454	100,0	100,0

Table 21 - Descriptive data for frequency of shopping of products (N=Total Respondents)

Descriptive Statistics			
	N	Mean	Std. Deviation
Clothes and Accessories	418	2,78	1,390
House products (ex: furniture, decoration)	418	1,50	,882
Food and consumer products	418	1,71	1,174
CD's, DVD's and console games	418	1,98	1,291
Books (except digital formats)	418	2,52	1,323
Electronic products (ex: smartphones, gadgets, household appliances)	418	2,45	1,337
Accessories for electronic products (ex: cellphone cases, headphones)	418	2,62	1,423
Cosmetics	418	1,63	1,020
Car/Motorbike products	418	1,38	,802
Other	418	1,57	1,224
Valid N (listwise)	418		

Table 22 - Descriptive data for frequency of shopping of products (N= Respondents that have not experienced online service products)

Descriptive Statistics			
	N	Mean	Std. Deviation
Clothes and Accessories	238	2,86	1,404
House products (ex: furniture, decoration)	238	1,45	,854
Food and consumer products	238	1,65	1,147
CD's, DVD's and console games	238	1,85	1,205
Books (except digital formats)	238	2,39	1,261
Electronic products (ex: smartphones, gadgets, household appliances)	238	2,28	1,292
Accessories for electronic products (ex: cellphone cases, headphones)	238	2,50	1,392
Cosmetics	238	1,66	1,051
Car/Motorbike products	238	1,31	,713
Other	238	1,49	1,157
Valid N (listwise)	238		

Table 23 - Descriptive data for frequency of shopping of products (N=Respondents that have experienced online service failures)

Descriptive Statistics			
	N	Mean	Std. Deviation
Clothes and Accessories	129	2,71	1,383
House products (ex: furniture, decoration)	129	1,54	,848
Food and consumer products	129	1,81	1,236
CD's, DVD's and console games	129	2,07	1,353
Books (except digital formats)	129	2,83	1,364
Electronic products (ex: smartphones, gadgets, household appliances)	129	2,72	1,323
Accessories for electronic products (ex: cellphone cases, headphones)	129	2,88	1,477
Cosmetics	129	1,61	,979
Car/Motorbike products	129	1,47	,875
Other	129	1,74	1,330
Valid N (listwise)	129		

Table 24 - Descriptive data of the Performance of Online Shopping Criteria (N=Respondents who have experienced online service failures)

Descriptive Statistics			
	N	Mean	Std. Deviation
Immediate expedition availability of the product (product in stock)	129	2,13	,869
Meeting the delivery deadline	129	2,24	1,052
Site's ease of use	129	2,15	,792
Site's design	129	2,44	,883
Quality of product information available on the site	129	2,39	,895
Privacy and Security on Purchase	129	1,77	,834
Guarantees of compensation and liability for delivery problems	129	2,44	1,328
Valid N (listwise)	129		

Table 25 - Descriptive data of the Performance of Online Shopping Criteria (N=Respondents who have not experienced online service failures)

Descriptive Statistics			
	N	Mean	Std. Deviation
Immediate expedition availability of the product (product in stock)	238	1,90	,800
Meeting the delivery deadline	238	1,82	,705
Site's ease of use	238	2,03	,800
Site's design	238	2,35	,802
Quality of product information available on the site	238	2,28	,967
Privacy and Security on Purchase	238	1,70	,700
Guarantees of compensation and liability for delivery problems	238	2,26	1,117
Valid N (listwise)	238		

Table 26 - Descriptive data of the Performance of Online Shopping Criteria (N=Total Respondents)

Descriptive Statistics			
	N	Mean	Std. Deviation
Immediate expedition availability of the product (product in stock)	370	1,98	,838
Meeting the delivery deadline	370	1,97	,870
Site's ease of use	370	2,08	,803
Site's design	370	2,39	,836
Quality of product information available on the site	370	2,32	,944
Privacy and Security on Purchase	370	1,73	,760
Guarantees of compensation and liability for delivery problems	370	2,32	1,197
Valid N (listwise)	370		

Table 27 - Descriptive data of the Importance of Online Delivery Service Variants (N=Respondents who have experienced online service failures)

Descriptive Statistics			
	N	Mean	Std. Deviation
Delivery place	129	1,37	,600
Delivery time	129	1,34	,538
Availability in stock	129	1,64	,684
Ease of communication with the delivery provider	129	1,57	,768
Service price	129	1,44	,717
Right product and in good conditions	129	1,13	,362
Valid N (listwise)	129		

Table 28 - Descriptive data of the Importance of Online Delivery Service Variants (N=Respondents who have not experienced online service failures)

Descriptive Statistics			
	N	Mean	Std. Deviation
Delivery place	238	1,39	,626
Delivery time	238	1,38	,566
Availability in stock	238	1,63	,762
Ease of communication with the delivery provider	238	1,66	,762
Service price	238	1,37	,586
Right product and in good conditions	238	1,16	,404
Valid N (listwise)	238		

Table 29 - Descriptive data of the Importance of Online Delivery Service Variants (N=Total Respondents)

Descriptive Statistics			
	N	Mean	Std. Deviation
Delivery place	367	1,39	,616
Delivery time	367	1,37	,556
Availability in stock	367	1,63	,734
Ease of communication with the delivery provider	367	1,63	,764
Service price	367	1,40	,635
Right product and in good conditions	367	1,15	,389
Valid N (listwise)	367		

Table 30 - Distribution of the Respondents by Delivery Method Preferences (N=Respondents who have experienced online service failures)

	Frequency	Percent	Valid Percent
Valid Collection of the product in a store	14	10,9	10,9
Delivery of the product at home	115	89,1	89,1
Total	129	100,0	100,0

Table 31 - Distribution of the Respondents by Delivery Method Preferences (N=Total Respondents)

	Frequency	Percent	Valid Percent
Valid Collection of the product in a store	48	11,0	13,1
Delivery of the product at home	319	73,3	86,9
Total	367	84,4	100,0
Missing System	68	15,6	
Total	435	100,0	

2. Online failures

Table 32 - Distribution of the Respondents by Experience of Online Delivery Failure

		Frequency	Percent	Valid Percent
Valid	Yes	129	29,7	35,1
	No	238	54,7	64,9
	Total	367	84,4	100,0
Missing	System	68	15,6	
Total		435	100,0	

Table 33 - Distribution of the Respondents by Frequency of Online Delivery Failures

		If so, how many times?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	64	49,6	50,0	50,0
	2,00	51	39,5	39,8	89,8
	3,00	7	5,4	5,5	95,3
	4,00	2	1,6	1,6	96,9
	5,00	2	1,6	1,6	98,4
	6,00	2	1,6	1,6	100,0
	Total	128	99,2	100,0	
Missing	System	1	,8		
Total		129	100,0		

Table 34 - Distribution of the Respondents by Communication of the Failure to the Online Store Company

		Frequency	Percent	Valid Percent
Valid	Yes	115	89,1	89,8
	No	13	10,1	10,2
	Total	128	99,2	100,0
Missing	System	1	,8	
Total		129	100,0	

Table 35 - Descriptive data of the Measures Taken when the Failure Happened

Descriptive Statistics			
	N	Mean	Std. Deviation
I stopped buying from the store with which I experienced the failure	128	3,66	1,785
I stopped buying from online stores	128	5,28	1,255

I made a complaint	128	1,88	1,451
I did a negative word-of-mouth about the company	128	3,98	1,734
I reduced my frequency of purchase	128	3,98	1,745
I reduced the value of my purchases	128	4,18	1,614
My relationship with the company did not change	128	3,38	1,784
Valid N (listwise)	128		

Table 36 - Distribution of the Respondents by Level of Satisfaction with Online Shopping

How satisfied are you overall with online shopping?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Immensely satisfied	21	16,3	16,4	16,4
	Very satisfied	68	52,7	53,1	69,5
	Satisfied	38	29,5	29,7	99,2
	Not very satisfied	1	,8	,8	100,0
	Total	128	99,2	100,0	
Missing	System	1	,8		
Total		129	100,0		

Table 37 - Descriptive data of the Value of Measures Taken Upon a Failure Occurrence

Descriptive Statistics

	N	Mean	Std. Deviation
Being informed of the problem	128	1,33	,603
Receiving compensations	127	2,20	1,322
Have a telephone contact or company person available	128	1,73	,962
Valid N (listwise)	127		

Table 38 - Descriptive data of the Preferred Compensation Actions

Descriptive Statistics

	N	Mean	Std. Deviation
Refund	128	1,44	,849
Discount on the next purchase	127	3,02	1,599
Offer enhanced service	127	2,42	1,383
Offer of a product	127	2,66	1,502
Valid N (listwise)	127		

3. Validity tests for the hypotheses

3.1 - E-service failures and consumers' characteristics

Table 39 - Summarized results of Hypothesis 1

H1 – The communication of failures to the e-service company is influenced by the consumers' sociodemographic characteristics						
Hypotheses	Sociodemographic characteristics		Communication of Failures		Pearson Chi-Square	Hypotheses Validation
			Yes	No		
H1a	Age (mean)		31.93	33.77	-0.591(b) p=0.556	Age does not influence the communication of failures
H1b	Gender	Female	53.9%	61.5%	0.274 p=0.413	Gender does not influence the communication of failures
		Male	46.1%	38.5%		
H1c	Monthly Net Income	>700€	27.8%	23.1%	0.834(a) p=0.893	Monthly net income does not influence the communication of failures
		700€ - 1400€	35.7%	38.5%		
		1400€ - 2100€	20.9%	15.4%		
		<2100€	15.7%	23.1%		
H1d	Place of Residency	Metropolitan Areas	71.3%	53.8%	3.770(a) p=0.136	The place of residency does not influence the communication of failures
		Other Cities	20.9%	46.2%		
		Rural Areas	7.8%	0%		
H1e	Level of Education	Basic Education	0%	0%	0.015 p=0.691	The level of educations does not influence the communication of failures
		Highschool	8.7%	7.7%		
		Higher Education	91.3%	92.3%		
H1f	Technological Abilities	Very Good	30.4%	46.2%	4.077 p=0.434	Technological abilities do not influence the communication of failures
		Good	53%	53.8%		
		Average	14.8%	0%		
		Bad	0.9%	0%		
		Very Bad	0.9%	0%		

(a) Fisher's Exact Test statistics
(b) t value from the Independent Samples Test

3.2 – E-service failures and online consumers’ behavior

3.2.1 – Hypothesis 2 – The experience of failures is influenced by the performance of certain e-commerce criteria

Table 40 – H2 Group Statistics

		Have you ever experienced a failure in the delivery of your online purchases?	N	Mean	Std. Deviation	Std. Error Mean
Immediate expedition availability of the product (product in stock)	Yes		131	2,13	,863	,075
	No		244	1,93	,831	,053
Meeting the delivery deadline	Yes		131	2,24	1,044	,091
	No		244	1,84	,739	,047
Guarantees of compensation and liability for delivery problems	Yes		131	2,45	1,320	,115
	No		244	2,27	1,122	,072

Table 41 - Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Immediate expedition availability of the product (product in stock)	Equal variances assumed	,034	,854	2,186	373	,029	,199	,091	,020	,379
	Equal variances not assumed			2,161	257,543	,032	,199	,092	,018	,381
Meeting the delivery deadline	Equal variances assumed	13,509	,000	4,267	373	,000	,396	,093	,214	,579

	Equal variances not assumed			3,859	201,593	,000	,396	,103	,194	,599
Guarantees of compensation and liability for delivery problems	Equal variances assumed	3,879	,050	1,390	373	,165	,180	,129	-,075	,434
	Equal variances not assumed			1,324	231,868	,187	,180	,136	-,088	,448

3.2.2 – Hypothesis 3 – The amount of failures experienced is influenced by the performance of certain e-commerce criteria

Table 42 – H3 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,240 ^a	,058	,035	,93661	2,215

a. Predictors: (Constant), Guarantees of compensation and liability for delivery problems, Immediate expedition availability of the product (product in stock), Meeting the delivery deadline

b. Dependent Variable: If so, how many times?

Table 43 – ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,768	3	2,256	2,572	,057 ^b
	Residual	110,532	126	,877		
	Total	117,300	129			

a. Dependent Variable: If so, how many times?

b. Predictors: (Constant), Guarantees of compensation and liability for delivery problems, Immediate expedition availability of the product (product in stock), Meeting the delivery deadline

Table 44 – Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1,108	,260		4,256	,000		
Immediate expedition availability of the product (product in stock)	,117	,105	,106	1,118	,266	,825	1,212
Meeting the delivery deadline	-,008	,091	-,009	-,091	,928	,751	1,332
Guarantees of compensation and liability for delivery problems	,148	,066	,205	2,237	,027	,891	1,123

a. Dependent Variable: If so, how many times?

3.2.3 – Hypothesis 4 – The amount of failures is influenced by the type of products bought online

Table 45 - H4 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,421 ^a	,177	,107	,90758	2,124

a. Predictors: (Constant), Other, Electronic products (ex: smartphones, gadgets, household appliances), Food and consumer products, Clothes and Accessories, Books (except digital formats), Car/Motorbike products, Cosmetics, House products (ex: furniture, decoration), CD's, DVD's and console games, Accessories for electronic products (ex: cellphone cases, headphones)

b. Dependent Variable: If so, how many times?

Table 46 – ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	20,745	10	2,074	2,518	,009 ^b
Residual	96,372	117	,824		
Total	117,117	127			

a. Dependent Variable: If so, how many times?

b. Predictors: (Constant), Other, Electronic products (ex: smartphones, gadgets, household appliances), Food and consumer products, Clothes and Accessories, Books (except digital formats), Car/Motorbike products, Cosmetics, House products (ex: furniture, decoration), CD's, DVD's and console games, Accessories for electronic products (ex: cellphone cases, headphones)

Table 47 – Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	TOL	VIF
	B	Std. Error	Beta				
1 (Constant)	,449	,342		1,314	,191		
Clothes and Accessories	,063	,067	,091	,941	,349	,754	1,327
House products (ex: furniture, decoration)	,165	,107	,146	1,540	,126	,781	1,281
Food and consumer products	,002	,071	,002	,026	,979	,840	1,190
CD's, DVD's and console games	,143	,072	,202	1,989	,049	,674	1,485
Books (except digital formats)	-,030	,065	-,043	-,464	,643	,825	1,213
Electronic products (ex: smartphones, gadgets, household appliances)	,122	,076	,168	1,602	,112	,625	1,599
Accessories for electronic products (ex: cellphone cases, headphones)	,036	,069	,055	,521	,603	,628	1,593
Cosmetics	-,067	,093	-,068	-,723	,471	,817	1,223
Car/Motorbike products	,056	,102	,051	,549	,584	,813	1,231
Other	,112	,061	,156	1,824	,071	,962	1,040

a. Dependent Variable: If so, how many times?

3.3 – Online consumers’ satisfaction and behavior

3.3.1 – Hypothesis 5 – The consumers’ level of satisfaction after an online failure is influenced by the performance of certain e-commerce criteria

Table 48 – H5 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,355 ^a	,126	,105	,654	1,811

a. Predictors: (Constant), Guarantees of compensation and liability for delivery problems, Immediate expedition availability of the product (product in stock), Meeting the delivery deadline

b. Dependent Variable: How satisfied are you overall with online shopping?

Table 49 – ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,759	3	2,586	6,052	,001 ^b
	Residual	53,848	126	,427		
	Total	61,608	129			

a. Dependent Variable: How satisfied are you overall with online shopping?

b. Predictors: (Constant), Guarantees of compensation and liability for delivery problems, Immediate expedition availability of the product (product in stock), Meeting the delivery deadline

Table 50 – Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1,479	,182		8,141	,000		
	Immediate expedition availability of the product (product in stock)	,204	,073	,256	2,790	,006	,825	1,212
	Meeting the delivery deadline	-,023	,063	-,034	-,359	,720	,751	1,332
	Guarantees of compensation and liability for delivery problems	,122	,046	,234	2,650	,009	,891	1,123

a. Dependent Variable: How satisfied are you overall with online shopping?

3.3.2 – Hypothesis 6 – The consumers' level of satisfaction after an online service failure is influenced by the given importance of certain e-commerce variables

Table 51 - Summarized results of hypothesis 6

H6 – The consumers' level of satisfaction after a failure is influenced by the given importance of e-commerce variables					
Hypothesis	E-commerce criteria	B	Beta	t	Conclusion
H6	Immediate expedition availability of the product (product in stock)	0.038	0.039	0.363	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
	Meeting the delivery deadline	0.251	0.148	1,184	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
	Site's ease of use	0.122	0.123	1,042	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
	Site's design	-0.064	-0.093	-0.989	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
	Quality of product information available on the site	-0.153	-0.160	-1.289	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
	Privacy and Security on Purchase	-0.016	-0.016	-0.146	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
	Guarantees of compensation and liability for delivery problems	0.131	-0.119	-0.977	Consumers' level of satisfaction after a failure is not influenced by the importance they give to this criterion
*p<0.05					

Table 52 – H6 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,245 ^a	,060	,005	,687	1,753

a. Predictors: (Constant), Guarantees of compensation and liability for delivery problems, Site's design, Immediate expedition availability of the product (product in stock), Site's ease of use, Privacy and Security on Purchase, Quality of product information available on the site, Meeting the delivery deadline

b. Dependent Variable: How satisfied are you overall with online shopping?

Table 53 – ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3,612	7	,516	1,095	,371 ^b
Residual	56,568	120	,471		
Total	60,180	127			

a. Dependent Variable: How satisfied are you overall with online shopping?

b. Predictors: (Constant), Guarantees of compensation and liability for delivery problems, Site's design, Immediate expedition availability of the product (product in stock), Site's ease of use, Privacy and Security on Purchase, Quality of product information available on the site, Meeting the delivery deadline

Table 54 – Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2,170	,218		9,940	,000
Immediate expedition availability of the product (product in stock)	,038	,104	,039	,363	,717
Meeting the delivery deadline	,251	,212	,148	1,184	,239
Site's ease of use	,122	,117	,123	1,042	,300
Site's design	-,064	,065	-,093	-,989	,325
Quality of product information available on the site	-,153	,119	-,160	-1,289	,200
Privacy and Security on Purchase	-,016	,110	-,016	-,146	,884
Guarantees of compensation and liability for delivery problems	-,131	,134	-,119	-,977	,331

a. Dependent Variable: How satisfied are you overall with online shopping?

3.3.3 – Hypothesis 7 – The consumers' level of satisfaction after an online service failure is influenced by the preferred delivery method

Table 55 – H7 Group Statistics

	Which method of delivery do you prefer?	N	Mean	Std. Deviation	Std. Error Mean
How satisfied are you overall with online shopping?	Collection of the product in a store	14	2,29	,469	,125
	Delivery of the product at home	114	2,13	,710	,067

Table 56 - Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
How satisfied are you overall with online shopping?	Equal variances assumed	1,391	,240	,789	126	,431	,154	,195	-,232	,540
	Equal variances not assumed			1,087	21,172	,289	,154	,142	-,141	,449

3.4 – Online consumers’ satisfaction and e-service failures

3.4.1 – Hypothesis 8 – The consumers’ level of satisfaction after an online service failure is influenced by the action the consumers value the most after a failure

Table 57 – H8 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,178 ^a	,032	,008	,688	1,833

a. Predictors: (Constant), Have a telephone contact or company person available, Receiving compensations, Being informed of the problem

b. Dependent Variable: How satisfied are you overall with online shopping?

Table 58 – ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1,902	3	,634	1,339	,265 ^b
Residual	58,255	123	,474		
Total	60,157	126			

a. Dependent Variable: How satisfied are you overall with online shopping?

b. Predictors: (Constant), Have a telephone contact or company person available, Receiving compensations, Being informed of the problem

Table 59 – Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	TOL	VIF
	B	Std. Error	Beta				
1 (Constant)	2,436	,212		11,492	,000		
Being informed of the problem	-,051	,111	-,045	-,465	,643	,842	1,188
Receiving compensations	-,095	,048	-,182	-2,000	,048	,952	1,050
Have a telephone contact or company person available	-,005	,068	-,007	-,075	,940	,881	1,135

a. Dependent Variable: How satisfied are you overall with online shopping?

3.4.2 – Hypothesis 9 – The consumers’ level of satisfaction after an online service failure is influenced by the compensation actions that consumers prefer the most

Table 60 - Summarized results of hypothesis 9

H9 – The consumers' level of satisfaction after a failure is influenced by the preference they give to compensation actions					
Hypothesis	E-commerce criteria	β	Beta	t	Conclusion
H9	Refund	0.064	0.079	0.837	Consumers' level of satisfaction after a failure is not influenced by the preference they give to this criterion
	Discount of the next purchase	0.021	0.050	0.456	Consumers' level of satisfaction after a failure is not influenced by the preference they give to this criterion
	Offer enhanced service	-0.026	-0.52	-0.471	Consumers' level of satisfaction after a failure is not influenced by the preference they give to this criterion
	Offer of a product	-0.024	0.051	0.441	Consumers' level of satisfaction after a failure is not influenced by the preference they give to this criterion

*p<0.05

Table 61 – H9 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,093 ^a	,009	-,024	,699	1,866

a. Predictors: (Constant), Offer of a product, Refund , Discount on the next purchase, Offer enhanced service

b. Dependent Variable: How satisfied are you overall with online shopping?

Table 62 – ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	,524	4	,131	,268	,898 ^b
Residual	59,634	122	,489		
Total	60,157	126			

a. Dependent Variable: How satisfied are you overall with online shopping?

b. Predictors: (Constant), Offer of a product, Refund , Discount on the next purchase, Offer enhanced service

Table 63 – Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	TOL	VIF
	B	Std. Error	Beta				
1 (Constant)	1,993	,205		9,735	,000		
Refund	,064	,077	,079	,837	,404	,910	1,099
Discount on the next purchase	,021	,047	,050	,456	,649	,686	1,458
Offer enhanced service	-,026	,055	-,052	-,471	,638	,662	1,510
Offer of a product	,024	,053	,051	,441	,660	,602	1,660

a. Dependent Variable: How satisfied are you overall with online shopping?