Universidade do Minho
Escola de Economia e Gestão

Domingos Manuel Barbosa Fonseca

The role of the consumer's data portability right in promoting competition: an experimental study

abril de 2023

The role of the consumer's data portability right in promoting competition: an experimental study

Domingos Manuel Barbosa Fonseca

UMinho | 2023

Universidade do Minho
Escola de Economia e Gestão

Domingos Manuel Barbosa Fonseca

The role of the consumer's data portability right in promoting competition: an experimental study

Dissertação de Mestrado
Mestrado em Economia

Trabalho efetuado sob a orientação do(a)
Professora Doutora Marieta Valente
Professora Doutora Rosa Branca Esteves

abril de 2023

Acknowledgments

After the completion of another stage, and perhaps the most challenging and most enriching stage, I could not fail to make a very special thank you to my two supervisors, Prof. Dr. Rosa Branca Esteves and Prof. Dr. Marieta Valente for all the support they gave me, for their total availability and for all the knowledge they transmitted to me. To them my sincere thanks.

Secondly, I would like to thank my whole family for the support and strength they gave me over these years, especially my father, Vitor Fonseca and my mother Anabela Barbosa for never letting me down and for showing me that although the path is often difficult and challenging, in the end it is worth all the work and effort.

Last but not least, I would like to thank the University of Minho, especially the School of Economics and Management for these two excellent years and my friends who accompanied me throughout this journey and, although sometimes not saying it, were also an excellent support and contributed to this research.

Statement of integrity

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

O papel do direito dos consumidores à portabilidade dos dados na promoção da concorrência: um estudo experimental

Resumo

O direito à Portabilidade de Dados contemplado no Regulamento Geral de Proteção de Dados (RGPD) dá aos cidadãos e às empresas o direito de solicitar que os seus dados pessoais sejam transferidos de um serviço ou plataforma para outro para que possam ser utilizados novamente. Esta dissertação pretende estudar em que medida os consumidores estão dispostos a solicitar a portabilidade dos dados, como forma de promover a concorrência.

Ao utilizar dados, as empresas podem inovar, melhorar a sua publicidade e a qualidade dos seus produtos, uma vez que o acesso aos dados dos clientes permite-lhes oferecer preços personalizados. No entanto, a posse exclusiva de dados, com poucos ou nenhuns substitutos, por parte de um número restrito de empresas, pode trazer enormes vantagens para as empresas. Assim, o acesso exclusivo aos dados pode funcionar como uma barreira à entrada de novas ou pequenas empresas, nomeadamente se estas não conseguirem aceder ao mesmo tipo de dados que as empresas já estabelecidas.

Foi desenhado um questionário para explorar as perceções dos consumidores nestas matérias, nomeadamente em que medida estão conscientes da importância da partilha de informação entre empresa e o seu impacto na concorrência. O estudo testou de forma experimental se a forma de apresentação do problema tinha impacto nas preferências dos consumidores em matéria de portabilidade de dados. Foram recolhidos dados de natureza quantitativa de 166.

Os resultados obtidos revelam que apesar de os indivíduos já terem ouvido falar do RGDP e de compreenderem em que é que consiste o direito à portabilidade de dados, continuam a existir preocupações relacionadas com a privacidade dos seus dados e, desta forma, ainda se sentem desconfortáveis em partilhar os seus dados com outras empresas. Por sua vez, a maioria dos inquiridos está consciente dos benefícios do big data bem como das barreiras impostas pelos dados e das implicações em termos de concorrência de preços.

Foi ainda possível verificar através de um tratamento experimental que independentemente da forma como é apresentada a decisão, os inquiridos preferem que os seus dados não sejam partilhados entre empresas. Quando é dada a informação aos indivíduos sobre os benefícios e custos da portabilidade de dados, os mesmos continuam a preferir que os seus dados não sejam partilhados entre empresas.

Palavras-Chave: Big data, discriminação de preços, perceção dos consumidores, portabilidade de dados, privacidade.

The role of the consumers' data portability right in promoting competition: an experimental study

Abstarct

The right to Data Portability contemplated in the General Data Protection Regulation (GDPR) gives citizens and businesses the right to request that their personal data be transferred from one service or platform to another so that it can be used again. This dissertation aims to study the extent to which consumers are willing to request data portability as a way of promoting competition.

By using data, companies can innovate, improve their advertising and the quality of their products, as access to customer data allows them to offer personalised prices. However, the exclusive possession of data, with few or no substitutes, by a limited number of companies can bring enormous advantages to those companies. Thus, exclusive access to data may act as a barrier to entry for new or small companies, in particular if they cannot access the same type of data as established companies.

A questionnaire was designed to explore consumers' perceptions on these issues, including the extent to which they are aware of the importance of information sharing between companies and its impact on competition. The study tested experimentally whether the way the problem was presented had an impact on consumers' preferences on data portability. Quantitative data was collected from 166 individuals.

The results obtained reveal that although individuals have already heard about the GDPR and understand what the right to data portability consists of, there are still concerns related to the privacy of their data and, therefore, they still feel uncomfortable sharing their data with other companies. In turn, the majority of respondents are aware of the benefits of big data as well as the barriers imposed by data and the implications in terms of price competition.

It was also possible to verify through an experimental treatment that regardless of how the decision is presented, respondents prefer their data not to be shared between companies. When individuals are given information about the benefits and costs of data portability, they still prefer their data not to be shared between companies.

Keywords: Big data, consumer perceptions, data portability, price discrimination, privacy.

Index

Index of tables

Index of graphics

Index of figures

List of abbreviations

EU - European Union

GDPR - General Data Protection Regulation

OECD - Organization for Economic Co-operation and Development

PP - Personalized Prices

TFEU - Treaty on the Functioning of the European Union

UK - United Kingdom

US - United States

WTA - Willingness-to-Accept

WTP - Willingness-to-Pay

1. Introduction

In digital markets, the exclusive access to significant volumes of personal customer data by large established companies such as Amazon has become a major focus of discussion in the competition and antitrust community. In recent years, more and more work has been done on the European legislative framework for the digital economy, and several laws have been proposed, such as the Data Act, the Digital Markets Act, the Data Governance Act and the Digital Services Act (Esteves and Carballo, 2023).

Companies by using data can innovate, improve their advertising and the quality of their products or services, and once they have access to customer data they can implement personalized pricing, a form of price discrimination that involves charging different prices to consumers according to their willingness to pay (OECD, 2018). In turn, the exclusive possession of data, with few or no substitutes, can bring established companies enormous advantages, making successful rivalries less possible.

According to Esteves and Carballo (2023) exclusive access to data can act as a barrier to entry for new or small firms if they cannot buy access to the same type of data as incumbent firms. In addition, apart from the policy-driven approaches to increase competition through mandatory information sharing, competition can also be enhanced by promoting consumer-driven tools, as is the case of data portability.

Data portability is one of consumers' data rights under the European General Data Protection Regulation (GDPR), which came into force on May 25, 2018. This right allows individuals to request a company with data about them, to transmit directly that data to a competitor. This suggests that consumers could play an important role in promoting a form of data openness, with important benefits for competition (Esteves and Carballo, 2023).

The topic chosen for this dissertation seeks to explore and understand the behaviour of consumer with regard to the right to data portability when they are aware of potential benefits associated to data openness. In other words, the main motivation for this study is to analyse consumer perceptions as well as their behaviours. Firstly, I will explore consumers' internet usage behaviour (e.g, how many sites they are registered on, how often they use the internet to shop, etc.). Second, I will assess consumer perceptions with regard to big data, GDPR, privacy, data barriers, and competitive implications of data openness. I will also study how information and the way the decision is presented affects the choice of consumers regarding whether or not to share their data. That is, I present some benefits and costs, both social and personal, to understand whether or not people being informed about them will have an impact on their decision to share the data or not. To understand if the way the decision is presented also has an impact, during the experimental treatment some people will default to data sharing and will have to say that they

don't want their data to be shared, others will default to not sharing data, and in this case they will have to say that they want their data to be shared, and finally, there will be a third situation where it is the people who choose whether or not they want their data to be shared.

In summary, this dissertation aims to answer the following research questions:

- What are consumer perceptions and potential choices towards data portability?

- Does the presentation of the decision make a difference for the choice of data portability?

- What is the impact of information about the benefits and costs or risks of data openness on consumers` preferences for data portability?

To answer these questions, I will design and implement a questionnaire based on questions from the existing empirical studies and questions developed according to the literature review performed. This questionnaire will be implemented using non-probability sampling techniques, through a convenience sample. After the questionnaire is implemented, the results will be collected and analysed, and then the conclusions will be drawn, always considering the literature review.

Through the completion of this dissertation, it was possible to verify that most people have heard of the General Data Protection Regulation and claim to understand the importance of data for companies in digital markets. However, they are still concerned about privacy when surfing the internet. Regarding the first research question, regardless of how the decision is presented, people showed that they would prefer companies not to share their data. Regarding the impact of the information, whether the personal and social benefits are presented or the social and personal costs, people prefer that companies continue not to share their data with other companies. Thus, it was possible to conclude that people prefer and feel safer knowing that their data is not shared between companies.

This paper is organized as follows. Sections 2 and 3 include a brief literature review on the GDPR, the right to data portability, and price discrimination. Section 4 includes the empirical evidence on consumers' perceptions of price discrimination and privacy. Section 5 discusses the methodology chosen to develop the work, section 6 presents the results of this study and, finally, section 7 presents the main conclusions.

2. The importance of data in digital markets

Back in 2017, The Economist published a story titled, “The world’s most valuable resource is no longer oil, but data”. Data are a central element of many digital markets, as a competitive asset and as potential entry barrier. Access to data has also led to new markets, and enabled companies to employ new business strategies such as personalized pricing or data-based price discrimination.

As referred in Esteves and Carballo (2023) exclusive possession of data, with few or no substitutes, may confer a form of unmatchable advantage to incumbent businesses, making successful rivalry less likely. When new entrants or smaller companies are unable to buy access to the same kind of data as incumbent companies, data can act as an important contributor of market power (or even as a barrier to entry).

The idea that exclusive access to a relevant competition input can grants market power is a well-established criterion in competition law. In digital markets, data are often identified by competition authorities as such an input and, thus, a contributor to market power (OECD, 2022). For instance, the Australian, Canadian, European Commission, UK and US competition authorities have all indicated in case decisions that the accumulation of data by an incumbent represents a significant barrier to entry. German competition law has also been amended to include data as a contributor to market power. This contribution generally depends on: the importance of a dataset for competing in a market; the quality and accuracy of the data in question; whether the value of data can expire; whether scale or other datasets are needed to use data effectively, whether there are alternative sources of data.

While greater collection of personal data allows businesses to innovate and improve the quality of their products/services, it also provides them with competitive advantage to implement new sophisticated forms of price discrimination strategies, like personalized pricing (henceforth PP). As discussed in the OECD paper on "Personalized Pricing in the Digital Era", the personalization of prices generally improves efficiency and often results in consumer gains by encouraging businesses to compete more intensively for each consumer (OECD, 2018a). However, in some circumstances, if implemented by businesses with substantial market power, it may result in consumer and competition harm (OECD, 2018a). Consumer harm will be even greater if the practice of personalized pricing helps incumbent companies with market power to block the entry of new competitors into the market.

When a firm has exclusive access to consumer data, that is, it has consumer data that other firms do not have, this will give it certain advantages, such as maintaining its position in the market and increasing its market share. According to Esteves e Carballo (2023) exclusive access to consumer data can create a

barrier both to new entrants and smaller firms that do not have access to such data. Thus, exclusive access to data has been a much-discussed issue in the competition and antitrust community.

Large incumbent companies have more and more access to consumer data, and this will increase competition and consumer concerns.

When there is exclusive access to data, the company that benefits from this and is already established in the market will have huge advantages over the others, making successful rivalry less possible. This can even act as a tool to exclude the remaining companies from the market. In this way, and as already mentioned, exclusive access to data can act as a barrier to the entry of new competitors. According to Bougette et al. (2019), data exclusivity has been increasing the situations of "economic dependence" in large companies, platforms or service operators due to the market power that this exclusive access to data originates. In addition, when companies have access to consumer data, it allows them to engage in price discrimination strategies, such as personalized pricing. Thus, if a company has exclusive access to data it will have competitive advantages over other companies, since only they will have information about consumers and will thus be able to practice customized prices according to consumers' willingness to pay.

In 2019, Montes et al. reported that when a firm has exclusive access to data to practice personalized pricing, the profit for the firm with access to data is greater than the profit for the firm without access to data. Customized pricing resulting from exclusive access to data by firms with market power can lead to harm to consumers, who will have to pay higher prices, and to competition, and can also block the entry of new competitors.

According to Budzinski et al. (2020) and the 10th Amendment to the German Competition Act, which became effective on January 19, 2021, having access to data is a critical factor in determining whether a company possesses "relative market power".

Consequently, the new digital ecosystem has pushed competition and regulation bodies around the globe to take actions to improve and adapt the regulatory frameworks for the digital economy.

The promotion of some form of data openness intervention in digital markets (e.g. mandatory information sharing or data portability) is often mentioned as a key part of a digital competition policy reform agenda, promoting competition and increasing consumer welfare in markets where competition is reduced without any intervention.

In particular, these measures have been highlighted in competition authority studies or expert panels commissioned. I can refer, for instance, the UK Digital Competition Expert Panel, 2019, the US Stigler Committee on Digital Platforms, 2019 and the recent OECD report on "Data Portability, Interoperability and Digital Platform Competition" (OECD, 2021b). All of them argue that data openness can stimulate competition by making it easier for new entrants to attract users and potentially alleviate barriers to entry associated with data access (mainly, in those markets for which individual-level data is valuable).

2.1 General Data Protection Regulation

The General Data Protection Regulation (GDPR), implemented on May 25, 2018, establishes a set of rules regarding the protection of the data of individuals, data that will be processed by a person, a company or an organization. This regulation authored by the European Parliament and the Council of the European Union applies to all individuals in the European Union and the European Economic Area and repealed the 1995 Personal Data Protection Directive.

Under the GDPR, all organizations processing the personal data of European citizens will have to comply with this regulation. The personal data that the GDPR protects is information about a natural person that allows that person to be identified, directly or indirectly, such as name, tax identification number or cell phone number.

As already mentioned, this personal data will be processed by a person, company or organization and such processing may consist of the collection, storage, consultation, alteration, disclosure or dissemination of such data. However, and in light of the GDPR, the data processing should be done in a legal manner and in compliance with all the rules of the regulation, and can only occur in accordance with the objective that was initially outlined. The data should in turn be stored throughout the period, securely, and until the intended purpose is achieved. For the data of individuals to be processed, the data subject must give consent that he or she wants his or her data to be processed, and the organization that will process it must demonstrate that such consent has been given in accordance with the rules of the GDPR. In turn, at the time of collection of personal data, the data subject must have full transparency of information from the organization that will collect his data.

According to the General Data Protection Regulation, the natural person has certain rights with regard to his personal data. The data subject may access his/her data at any time, has the right to limit or object to the processing of his/her data, may request the erasure of personal data in situations where it is no longer necessary (when consent has been withdrawn, when he/she objects to the processing, or even

when the data has been collected or processed unlawfully), and also has the right to receive personal data in a structured, commonly used and machine-readable format.

It is extremely important that the organization holding individuals' data is extremely responsible in its use of the data and tries to avoid a data breach, otherwise the confidentiality, availability or integrity of the data may cease to exist. To avoid this, the best solution is to always act in accordance with the General Data Protection Regulation.

2.2 The Right to Data Portability

According to OECD (2021a,b), the right to data portability gives citizens and businesses the right to request that their personal data be transferred from one service or platform to another so that it can be used again. Importantly, it has also been heralded by European political leaders as a significant new digital right. This right is present in Article 20 of the General Data Protection Regulation which is a Europe-wide law that defines the rights of European citizens regarding data privacy and access. This Article 20 of the GDPR sets out how data should be able to be transferred, to what extent data should be transferred, the type of data covered by this right in terms of content and origin, how data should be processed, and what opt-out situations are allowed where this right does not apply, either directly or indirectly.

As Europe is a Digital Single Market and according to the Treaty on the Functioning of the European Union (TFEU), some laws considered at the European level should be implemented by all Member States. The General Data Protection Regulation is one of them. Thus, each member state must align its country's data privacy legislation with the GDPR. The supervision of the implementation of the GDPR in a given country is done by the Data Protection Authorities, these being the national regulatory bodies responsible for this supervision. These are the authorities responsible for receiving complaints filed by individuals when there is a violation of their rights that goes against what is stipulated in the GDPR. After receiving the complaints, it is up to the Data Protection Authorities to review the case and try to find a solution to it.

In line with this, and according to Exposito-Rosso et al. (2021), the General Data Protection Regulation has several benefits for both individuals and business owners, businesses as well as for society in general. For individuals and business owners, the right to data portability allows them to not have to re-enter information or copy data to new services, to share data in order to access more personalized services, thus increasing the quality of services. In addition, with the right to data portability individuals and business owners can sell or trade our data to access special discounts and allows them to spend less

time on rebuilding our digital footprint into new services. For society, the right to data portability creates a more level playing field, increases our participation in digital economies, allows individuals to contribute their data to specific causes such as health research, and allows to strengthen startups and other companies that make use of shared data. Finally, for business and industry this right can play an important role in innovation and in promoting competition in the market.

3. Literature Review

3.1 Price discrimination

According to Bourreau and Streel (2018) and OECD (2018a,b), price discrimination consists of a firm charging different prices for the same or similar product to two or simply one consumer and this price difference does not reflect cost differences.

When resorting to price discrimination the firm does so with the goal of making as much profit as possible taking into account what consumers will be willing to pay for its goods or services. In turn, it should be noted that price discrimination is not always practicable. For it to be so, it is important that the firm has data and some market power and that there is no possibility of arbitrage or resale, or at least this possibility should be limited. If there is the possibility of resale, price discrimination may not be possible because consumers may buy the goods at low prices and sell them back at higher prices.

3.1.1 Categories of Price Discrimination

After explaining what Price Discrimination is, it is important to mention that there are three traditional categories of price discrimination (Pigou, 1920).

The first category, called first degree price discrimination or perfect price discrimination is when the firm charges the consumer the maximum price the consumer is willing to pay for the good or service. The second category, called second-degree price or versioning occurs when the consumer is offered several versions of the same good or service at different prices. Then according to his tastes and preferences he chooses which version he wants. Since this second category does not depend on the information that firms have about consumers, it is an indirect form of price discrimination. Finally, the third category, called third degree discrimination or group pricing, consists of assigning different prices to different groups of consumers. These prices will be assigned taking into account the observed characteristics of each group rather than individual characteristics.

3.1.2 Impact of digitalization on price discrimination strategies

According to the Executive Office of the US President (2015) the information that firms have about their consumers can increase their ability to price discriminate. More and better information about consumers means greater ability of firms to price discriminate. Therefore, and according to Bourreau and Streel (2018), access to big data by many companies plays an important role when it comes to price discrimination.

According to Esteves (2022), the growth of big data, Big Analytics, and self-learning pricing algorithms has allowed online sellers to experiment with better ways of price discrimination. Some consumer characteristics and behaviours, such as volume purchasing habits, consumer location, frequency of visits to a store (offline/online) and time spent on each visit, products viewed, and consumer devices used are being tracked by retailers in order to estimate consumers' willingness to pay for certain products or services to thus adopt personalized pricing, these being a form of price discrimination that is defined by charging different prices to consumers with different valuations.

In digital markets, data collection for personalized offers is practically infinite, meaning that the detection of personalized pricing can be a complex task since, "the technical possibilities of online personalization have become much more advanced and difficult to measure". In line with this and according to OECD (2018a), state that although evidence is still few, there is already data showing that personalized pricing is already occurring to some extent.

As mentioned, access to consumer data by firms allows them to determine consumers' willingness to pay. Thus, knowing consumers' willingness to pay and having some market power, companies can set discriminatory prices. From an extreme point of view, firms may charge the maximum each consumer is willing to pay.

3.1.3 Profit and consumer welfare effects of price discrimination

It is well known in the academic literature that a monopolistic company benefits from the ability to engage in price discrimination (Varian, 1989). This benefit is stronger under first-degree price discrimination or personalized pricing.

In the presence of competition, the assumption that companies possess market power through access to data may not hold true. When all firms have equal access to consumer data for price discrimination, profits may decrease. Thisse and Vives (1988) pioneering research, based on the Hotelling model, reveals

that, in a competitive static environment, perfect information on consumer preferences, leading to perfect price discrimination, can result in varying profit and welfare outcomes depending on the firms' available data. When firms are symmetric and possess equal data, personalized pricing amplifies price competition, increases consumer surplus, but reduces profits.

In models with best-response asymmetry (Corts, 1998), where the strong market of one firm is the weak market of its competitor, firms charge lower prices to the rival's customers than to their own customers. Nevertheless, literature suggests that personalized prices can have a positive impact on profits under specific conditions, such as firms' asymmetry (Shaffer and Zhang, 2002; Ghose and Huang, 2009; Matsumura and Matsushima, 2015), multi-dimensional product differentiation (Esteves, 2009), imperfect targetability (Chen et al., 2001), and heterogeneous demand from consumers (Esteves, 2022).

When one firm has exclusive access to data for PP, compared to uniform pricing, profit is higher for the informed firm and lower for the uninformed firm (Montes et al., 2019 e Esteves and Carballo, 2023). In this case, overall consumer surplus is still higher, but welfare falls due to inefficient shopping by those consumers who buy from the more distant firm (excess "transportation costs" in the Hotelling linear city). According to Esteves and Carballo (2023) when two firms have uniform prices, half of consumers will buy from one firm, and the remaining from the other firm. However, exclusive access to data will cause the dominant firm to reduce the probability of entry by another firm and will decrease consumer welfare because there will be a higher percentage of consumers buying from the firm they prefer less. In addition, the firm that discriminates prices will have a higher profit than its adversary. In turn, when the two firms share information, compared to a situation where one firm discriminates and the other does not, consumer surplus would increase as well as the probability of entry and consumer welfare.

In short in a monopoly situation or if a firm has a data advantage to practice alone price discrimination, price discrimination might be a profitable strategy for the discriminating firm.

Regarding the impact of price discrimination on welfare, in general, a monopoly firm discriminating on prices will benefit consumers with low willingness to pay (market expansion effect) and will harm consumers with high willingness to pay (appropriation effect). High willingness-to-pay consumers, on the other hand, in a monopoly situation will pay higher prices, while in a competitive environment this may not be the case. If the demand expansion effect is greater than the appropriation effect, price discrimination increases total consumer surplus and welfare. If the opposite is true, price discrimination decreases total consumer surplus.

Under competition, with no market expansion, if prices fall with price discrimination, consumers surplus increases with price discrimination (Thisse and Vives, 1988). If consumers buy efficiently (i.e., from the preferred firm), price discrimination has no impact on overall welfare (Thisse and Vives, 1988). The same is not true if due to price discrimination, some consumers buy inefficiently (Fudenberg and Tirole, 2000).

Therefore, in a competitive situation price discrimination can act to promote consumer surplus.

4. Empirical evidence about consumer perceptions

In this chapter, I will review the literature of empirical studies that will then inspire the construction of our questionnaire. More specifically, I discuss briefly some relevant studies on consumers' perceptions about price discrimination and privacy.

4.1 Price discrimination

4.1.1 Consumer preferences

As Garbarino and Maxwell (2010) mention, the Internet has facilitated the flow of information for sellers and buyers, with potential benefits for both. Buyers can find product information more easily while sellers, among other practices, can apply pricing strategies were not possible before. According to Sahay (2007) one of the pricing practices that allows exploiting consumers' heterogeneous sensitivity to prices, sales, and profits is dynamic pricing. Dynamic pricing is a strategy that varies over time influenced by the volatility of supply and demand or the competitive environment. According to Iyer et al. (2002) and Obermiller et al. (2012), increasing access to consumer data, through for example access to browsing history and social media profiles, has made it possible to make prices increasingly personalized.

Focusing now on personalized pricing, several studies argue that this strategy can boost firms`profits (e.g. Matsumura and Matsuhima (2015), Esteves and Shuai (2022); Esteves (2022)).

However, this pricing practice can also cause some problems for companies due to consumer reactions. According to Streitfel (2000), Rosencrance (2000) and Huang et al. (2005), in 2000 Amazon first tried to implement personalized pricing in its online store, and was accused of identifying existing customers through cookies and evaluating a customer's previous purchase behaviour to discriminate the prices of a

DVD between loyal and new customers. Upon discovering this strategy consumers immediately made complaints and Amazon stopped this price discrimination strategy.

This episode of Amazon demonstrated that price discrimination based on data, despite helping to increase the profitability of the company, can also alienate consumers making them, as mentioned by Xia et al. (2004), feel unfairly treated. Thus, it can be shown that not all consumers react well or in the same way to price discrimination.

Studies by Cox (2001), Kahneman et al. (1986) and Maxwell (2002) show that consumers accept certain prices depending on their perception of fairness. According to Haws and Bearden (2006); Huang et al., (2005); Maxwell and Garbarino, (2010), when consumers consider pricing practices unfair they have negative attitudes and behaviours. Thus, the idea and feeling of unfairness lead to mistrust and decreased purchase intentions by consumers, as mentioned by Campbell, (1999); Huang et al., (2005); Kahneman et al., (1986); Lii and Sy, (2009).

According to the OFCOM report (2020), in a survey carried out in the communications sector, the participants of that same survey referred to personalized prices, that is, one of the forms of price discrimination as unfair, since there are different prices for different people. different people and not knowing the price that other people would be paying for the same good or service made them doubt and feel unfair for not knowing whether what they themselves would be paying was good or not. This study generated a feeling of injustice in consumers who pay more than others for a service and a feeling of concern in those who choose not to share their data so that personalized prices are practiced. In turn, still in this report, the study carried out showed that a small minority of participants considered that personalized prices could be beneficial in the case of families with lower incomes if they paid lower prices for goods and services.

According to Dickson and Kalapurakal (1994), price fairness is the main driver of acceptance of dynamic and personalized price offerings, which leads to immediate changes in consumer behaviour. On the other hand, and according to Garbarino and Maxwell (2010) and Lii and Sy (2009), the feeling of unfairness leads to less trust in benevolence, less likelihood to buy from this retailer and more involvement in additional research activities. If this perception of unfair pricing is high, customers may choose to complain, ask for a refund, or leave the retailer.

Xia et al. (2004) mentions that consumers evaluate the fairness of a price based on at least one reference price. If the consumer has a high level of trust in the company, if the company sticks to social norms, or if it has a justified reason to increase its prices, the feeling of unfairness is lower.

More recently, Hufnagel et al. (2022) conducted three online experiments to understand consumers' responses to personalized pricing discrimination in e-commerce. For each experiment a survey was used and the sample used in each one was different. A total of 352 respondents participated in the first experiment, excluding those who could not remember the price they or their friends paid. In addition, respondents whose demographic data were incomplete were also excluded, leaving a final sample of 307 individuals. Of the final sample, 51% were female, and the age ranged from 22 to 72. 83 % were in full-time employment and 8 % were unemployed. Finally, 52 % of the individuals indicated that they had a gross household income of $50,000. In the second experiment 614 survey responses were collected, using the same exclusion criteria as in the first experiment. The final sample was 440 individuals, 46% were female and aged between 18 and 77. 48% of the individuals indicated that their annual gross family income was over $50000. Finally, in the third experiment 606 survey responses were collected and individuals who could not remember the price they or their friends paid, individuals who could not remember why the price difference occurred, and individuals with incomplete data on their demographics were excluded. That said, the final sample was 505 individuals where 47% were female and the age ranged from 21 to 75. In addition, 46% indicated that they had an annual gross household income of more than $50000.

In the first experiment they studied the consequences of price discrimination, comparing customers favored by price discrimination and customers disadvantaged by price discrimination. Through this experiment they attempted to provide empirical evidence that price discrimination leads to negative reactions from both disadvantaged and advantaged customers.

The second experiment served to verify the robustness of the results of the first experiment. Through this experiment it was attempted to provide further empirical support of the influence of personalized pricing on perceived fairness.

Finally, the third experiment attempted to understand consumers' reactions to personalized price discrimination based on data. In this experiment participants were randomly provided with information about why their prices varied from the price paid by their friend.

Through the first experiment it was indeed possible to observe negative attitudes and behaviours by both groups of customers, that is, even customers favored with a lower price compared to uniform prices showed lower purchase intentions and higher intentions to look for new vendors. The second experiment confirmed these facts, however, and as expected, the negative effect on purchase intention and the positive effect on future search intention is stronger in disadvantaged customers. With the third

experiment and having the personalized price discrimination based on data, the conclusions were the same, that is, customers disadvantaged by personalized price discrimination react with lower purchase intentions and higher future search intentions, and they have a lower trust in benevolence.

So far only the perception of consumers about the fairness or unfairness of prices has been addressed, however it is still important to mention that information about the ability of a company to offer a lower price certainly changes the internal reference price of consumers because the consumer knowing this ability of the company to offer a lower price will make him want to pay this lower price and not a higher price charged by the same or another company, thus changing his internal reference price (Campbell (2007)).

According to Campbell (2007), emotions, along with cognition, play an important role in decision making, particularly when it concerns unfavourable price treatment. Feinberg et al. (2002) further states that if a certain price is available to one consumer and another price is available to another consumer it will affect the consumer's store choice, and this is the reason why disadvantaged and advantaged consumers may have different preferences for stores that apply different pricing policies.

4.1.2 Influence of type of data shared

The data that consumers choose to share and disclose in order to receive a personalized price offer can have a significant impact on the prices and discounts that are ultimately offered to them. This, in turn, can influence their willingness to provide personal data in the future. This data can be of two types: behavioural and biometric data.

According to Ioannou et al. (2020), behavioural data refers to the "collection of behavioural information from individuals related to the individual's activity, personal interests, location-based data, purchase history, browsing patterns, and search history". Biometric which is related to the unique physical characteristics of individuals (Morosan (2018) and Mothersbaugh et al. (2012)). Behavioural data in retail is used to better understand consumers´ actions and behaviours within a given store or in retail in general. Biometric data, on the other hand, is used to identify the identity of a particular person. In turn, Pizzi et al. (2022) argue that customers are less inclined to use technologies that require biometric data to be shared and disclosed. Moreover, consumers consider biometric data disclosure to be more sensitive and thus the material benefits do not outweigh the risk of losing control of their personal data.

According to Aguirre et al. (2016), consumers engage more with a company when the benefits of personalization outweigh concerns about data type and collection. In a study by Smith et al. (2011) it is

stated that the sensitivity of the data requested affects customer responses and sharing more sensitive data with more personal information may decrease individuals' behavioural intentions (Okazaki et al. (2020)).

According to Mothersbaugh et al. (2012) the higher the sensitivity of the data, the higher the psychological cost to the consumer and the consumer expects the disclosure of behavioural data to provide more benefits and put them less at risk than the disclosure of biometric data.

As discussed in the previous section, the decision on whether to share data is often related to the consumer's perception of fairness. This perception leads to different reactions of consumers regarding the type of data they share and disclose. In line with this, Pizzi et al. (2022) conclud that consumers react more favorably to requests for behavioural data, seeing this request as fairer, increasing their confidence in sharing their data.

In terms of price customization, one of the studies reviewed in the research conducted by Pizzi et al. (2022) demonstrated that offering better prices to customers through personalized pricing can lead to improved consumer reactions. This is because consumers perceive a benefit associated with disclosing their personal data.

The second study in this research uses the level of effort instead of the incentive. This second study shows how the type of data in conjunction with the level of effort required to obtain a personalized price influences customers' expectations of the discount. When fairer results are available, consumers' privacy concerns decrease and their sense of receiving a benefit from the retailer increases. This study also concludes that when customers see personalized prices with a low level of effort, their perceptions of distributive justice increase.

Thus, it can be concluded that the impact that the type of data has on perceptions of fairness varies depending on the incentive given to customers and the level of effort required to see the personalized price.

4.2 Privacy

According to Wagner et al. (2018) and Acquisti et al. (2015), I currently live in the information and digital age, where privacy concerns in the digital realm have become one of the most pressing issues of our time. Personal information has become a valuable commodity, and the demand for it has grown significantly among companies. The reason for this is that access to customer data and information can

provide companies with numerous advantages. Moreover, this surge in demand for personal information has also given rise to heightened concerns regarding information privacy. As Acquisti et al. (2015) note, activities that were once considered private or left little data trail now have the potential to expose individuals' interests, beliefs, and intentions. With the use of email, messaging, social media, online shopping, and browsing the web, individuals are unconsciously or intentionally disclosing information about themselves to both companies and even governments.

As mentioned earlier, companies can benefit from access to data that has previously been hidden. However individuals themselves and society as a whole can also benefit from such sharing, such as when electronic medical records are combined to observe medically novel interactions.

The misuse of personal data can compromise our privacy, which is why Acquisti et al. (2015) stress the importance of examining whether individuals are equipped to navigate the privacy landscape of the information age and what behaviours they exhibit regarding privacy concerns.

A first important issue is people's uncertainty about the nature of the trade-offs between privacy loss and their own preferences privacy. The most obvious source of uncertainty arises due to incomplete and asymmetric information. With advances in information technology, the collection and use of personal data has become invisible and thus individuals rarely have a clear understanding of what information other people, companies and governments have about them or how that information is used. This implies that individuals do not know how much information to share. Another source of privacy uncertainty consists of preferences. Sometimes, even though individuals are aware of the consequences of privacy decisions, they may have doubts about their own privacy preferences. An investigation by Slovic (1995) into preference uncertainty showed that individuals often have little idea how much they like goods, services or other people, and when it comes to privacy this is no exception. In another investigation by Singer et al. (1992) sensitive and potentially incriminating questions were ugly, followed by credible assurances of confidentiality. While these assurances were supposed to lead to greater disclosure, they had the opposite effect, as they elevated respondents' privacy concerns, which without the assurances would have remained dormant.

The second issue concerns the context-dependence of privacy preferences. Several works, such as Murphy (1964), Moore (1984), Johnson et al. (2002), Hayat (2007) and Hargittai (2008), and suggest that privacy is a universal human need. However, when individuals have doubts about their preferences they look to their environment for clues to provide guidance. Thus, context dependence means that individuals may, depending on the situation, exhibit preferences ranging from extreme concern to apathy

about privacy. Similar to uncertainty, context dependence implies that people cannot always be counted on to make decisions about trade-offs involving privacy in a way that maximizes their utility, because people are often unaware of what information they share, how it can be used, and are often uncertain about their own preferences.

A third issue concerns the malleability of privacy preferences, that is, privacy preferences are subject to the influence of those who have greater insight into their determinants. With the emergence of the information age, economic interests around the disclosure of personal information have also emerged. Thus, some entities have an interest and have developed expertise in exploiting behavioural and psychological processes to promote disclosure. These efforts use the malleability of privacy preferences so that various factors can be used to activate or suppress privacy concerns, which in turn affect behaviour. In this way, malleability implies that people are easily influenced in what and how much they disclose. In turn, what they share can be used to influence their emotions, thoughts and behaviour in many aspects of their lives. This influence, while not always dangerous, alters the balance of power between those who hold the data and those who are the subjects of that data. According to Hartzog (2010), some websites have used design features known as "malicious interface design" that influence, frustrate, and even end up tricking users into disclosing personal information. Goldfarb et al. (2011), mentions that some commercial entities in order to avoid raising privacy issues use too thin personalized advertising, that is, when it comes to data collection consumers are alerted and may respond with negative "reactance". In addition to this and according to a survey by Hoofnagle and Urban (2014), 62% of respondents believed (incorrectly) that the existence of a privacy policy implied that a website could not share their personal information without permission, which shows that simply publishing a policy that consumers do not read can lead to mistaken feelings of protection.

After addressing these three issues about individuals' ability to navigate privacy in this information age it is important to make reference to whether and how individuals value their privacy. As mentioned earlier, information is the new commodity of the 21st century and thus the valuation of personal information is more relevant today than ever before due to the increased demand and profitability for companies. Some of the companies that benefit most from this are online companies such as Facebook and Google due to the strong use by consumers and the high amount of information that these same users share and reveal during their use. Since privacy is controlled by companies, it can be traded by individuals in order to gain certain benefits. However, there are associated risks and according to Smith et al. (1996), the risks can be categorized into four dimensions, these being collection, improper access, error restrictions and use of secondary data. As far as benefits are concerned, these should outweigh the risks when disclosing

personal information. Some scholars, such as Chelappa and Sin (2005) and Hann and Lee (2002), have found evidence that people trade their personal information for advanced services or monetary rewards, and thus understanding the value that people place on their personal information is necessary for companies to provide services accordingly.

However, the value that people place on privacy is difficult to assess and is usually subjective.

In order to evaluate privacy, these same scholars relied on surveys and experiments, measuring the amount of data that is disclosed and shared with third parties in order to assess the value of privacy. They investigated what determines an individual's valuation of privacy and how privacy is negotiated, through their willingness to pay (WTP) or their willingness to accept (WTA). WTP for privacy refers to the fact that people prefer to pay a fee for features that enhance their privacy and WTA describes people's willingness to sell data in exchange for monetary benefits.

Once the reference to individuals' valuation of privacy has been made let us mention some contextual factors that affect individuals' valuation of privacy. These factors can be the following: type of information, person, prejudices, individual, privacy, value related factors and social factors. The type of information is related to location, age and weight data, as well as general information/sociodemographic demographics. The type of person is related to personality traits. With regard to the privacy factor, according to Grossklags and Acquisti (2007), privacy preferences are the main antecedent for WTP and WTA and the valuation of privacy is negatively affected by the disposition determinant "general privacy concern". According to Spiekermann et al. (2012) value-related factors have a great influence on privacy valuation, already Steinfeld (2015) mentioned that monetary reward offered in exchange for data is an important antecedent to explain people's willingness to trade their data. Finally, and according to Racherla et al. (2011), social factors have shown that social norms influence willingness to pay for privacy.

Table 1 shows the contextual factors.

Table 1: Contextual Factors

Contextual Factors	
Person	Personality Traits
Privacy	Privacy Concerns Degree of Sensitivity Privacy Icons Privacy Assurance Data Storage Usage Purpose Secondary Data Use Attacker Identity

	Error Restrictions Improper Access Idenification
Individual	Usage Intensity Behavioural Control Psychology of Ownership Perceived Desirability Future Convenience
Social	Social Norm
Value	Asset Consciousness Monetary Reward
Biases	Endowment Effect Order Effect
Type of Information	General Age and Weight Mobile Data Browsing Location Data SNS IQ Score Purchase Info

Source: Own elaboration based on Wagner et al.(2018).

According to this study by Wagner et al. (2018), for online companies that rely on customer information, individuals disclose their information when benefits are offered accordingly. In addition, online companies are made aware of the key factors that can lead to valuing privacy. With regard to individuals, the study by Wagner et al. (2018) reveals the various factors that drive awareness and consciousness, such as the transparent use and identification of secondary data to increase their privacy valuation.

In short, the monetary valuation of personal information can be measured based on how much people are willing to pay in order to be protected, as well as how much they are willing to accept in order to disclose their personal information. The proposed value of individuals' privacy, on the other hand, is generally low, and individuals' valuation of privacy increases the more accessible and sensitive information about it is.

In recent years, a number of experimental studies and questionnaires have been conducted to gain a better understanding of privacy concerns around data and information sharing, as well as to explore the consequences of these concerns and the factors that influence certain attitudes. One such study, conducted by Marreiros et al. (2017), employed an online survey to investigate how information affects consumers' actions and attitudes regarding privacy, as well as how people react to news about privacy issues. The study recruited 508 participants from the UK, US, Ireland, Australia, and Canada in June

2015, using the Prolific Academic crowdsourcing community for recruitment. Each participant received £1 for completing a survey that took an average of 10 minutes. The experiment was designed in Qualtrics Online Sample, with randomization of treatments programmed into the survey software. The experimental manipulation involved presenting newspaper article excerpts that highlighted a negative, positive, or neutral aspect of companies' privacy practices. The study then assessed the effect of this manipulation on three measures of social preferences: people's disclosure of information, participation in social action, and attitudes toward privacy and personalization. The study concluded that participants revealed less identifiable information when exposed to information, even when the information related to positive privacy characteristics. Additionally, privacy concerns were found to be latent and only became manifest when users were prompted to think about privacy.

In another experimental study, Schudy and Utikal (2017) attempted to understand the willingness to share personal data with anonymous recipients. To achieve this goal they conducted three separate studies on the willingness to share personal data with anonymous recipients when personal data is verified by the experimenter and provided a robustness test on the importance of verifying personal data when eliciting privacy preferences. The studies conducted were as follows: Study 1: number of participants and the willingness to share data, Study 2: social distance and willingness to share data, Study 3: combining personal information, and Study 4: the importance of data verification. Each of the studies further consisted of four parts. In the first part the participants' personal data are filled out on a form, in the second part the participants' willingness to accept (WTA) to have their personal data shared with anonymous recipients was obtained, in the third part the participants answered a questionnaire for which they received a payment of $3 (regardless of their decisions), and in the fourth part the payments were determined through an individual drawing of a price offer. For each trial, behaviours were compared across treatments using three different outcome measures. One compared the probability of refusing data sharing, secondly the authors focused on the probability of accepting all positive offers, and finally the willingness of each participant to accept (WTA) that their data be shared with anonymous recipients was identified. With this, it was concluded that people do not favor sharing data with closer recipients, willingness to share information decreases with the number of recipients, data pooling leaves willingness to share unchanged, and verification of personal data is essential to avoid measurement bias.

Finally, Goméz-Barroso (2018), in a questionnaire-based experimental study, studied the behaviour of individuals when deciding whether the disclosure of personal information is a key issue for society in general. For this study, they sampled 23 and 83 students in two experiments and a sample of 1200 university students from five EU countries to answer two questionnaires. Next, the research focused on

the existence of the so-called privacy paradox -a term that describes the irrational behaviour of individuals when making determinations about their personal data (Goméz-Barroso (2018))-, the importance of trust and control as mediators of self-disclosure, the impact of incentives (either monetary or in the form of personalized products), the willingness to pay for privacy protection, and non-rational behaviour.

Despite the importance of the topic of privacy, there has been limited experimental work compared to surveys and theoretical approaches. Most experiments have focused on analysing the impact of factors that characterize rational behaviour, and studying inconsistent user behaviour is a promising direction for further research. It is also important to note that no single theory or model can fully encompass all behavioural situations of individuals.

The following table (table 2) presents a summary of the empirical studies on privacy that have been mentioned.

Table 2: Studies about perceptions of privacy

Auhor	Article	Objetive	Methodology	Sample	Conclusions
Acquisti et al. (2015)	Privacy and human behavior in the age of information.	Understanding people's behaviour and uncertainty about the consequences of privacy-related behaviours and their own preferences about the consequences.	Literature Review		People's privacy-related behaviours depend on culture and context. Uncertainty and context dependence make people unaware of how information sharing can be used, and they are at times uncertain of their own preferences. Malleability implies that people are easily influenced in what and how much they disclose.
Schudy and Utikal (2017)	"You must not know about me" —On the willingness to share personal data.	Understanding willingness to share personal data with anonymous recipients.	Experimental studies made in the laboratory	470 participants	People do not favor sharing data with closer recipients. Willingness to share information decreases with the number of recipients. Pooling data leaves willingness to share unchanged. Verification of personal data is essential to avoid measurement bias.
Marreiros et al. (2017)	"Now that you mention it": A survey experiment on information, inattention and online privacy.	Investigate whether information affects consumers' actions and attitudes regarding privacy. To understand how people react to information reported in	Online survey designed in Qualtrics Online Sample.	508 participants born in the UK, US, Ireland, Australia and Canada.	Participants reveal less identifiable information when exposed to the information, even when the information relates to positive privacy characteristics. Privacy concerns are hidden and manifest when users are asked to think about privacy.

		the news regarding privacy.			
Goméz-Barroso (2018)	Experiments on personal information disclosure: Past and future Avenues.	Understanding our behaviour when deciding whether to disclose personal information is a key issue for society at large.	Experimental studies and questionnaires.	Samples of 23 and 83 students in two experiments. Sample of 1200 university students from five EU countries answered two questionnaires.	Experiments are only a few when compared to surveys and theoretical approaches. Virtually all the experiments conducted aim to assess the impact of factors that characterize rational behaviour. The study of inconsistent user behaviour (heuristics) is a promising direction for research. No single theory or model will be able to encompass all behavioural situations of individuals.
Wagner et al. (2018)	Putting price tag on personal information.	Determine the value people place on their personal information and conceptualize preliminary approaches and findings in a unified way.	Literature review of empirical studies, surveys, field and laboratory studies.		The monetary valuation of personal information can be measured as how much people are willing to pay in order to protect it, as well as how much they are willing to accept to sell their personal information. The proposed value of individuals' privacy is generally low. Individuals' valuation of privacy increases the more accessible and sensitive information about it is.

Source: Own elaboration

5. Methodology and implementation

In this chapter, the methodology employed for the research and the process of data collection are discussed.

5.1 Methodology

To collect primary data, a questionnaire survey is designed, incorporating theoretical aspects and empirical studies from the literature review. Following Bell's (2005) classification, an empirical and experimental method will be employed to collect and analyse the data.

Due to the lack of studies in this field, namely concerning the perceptions of individuals towards data portability, the existence of empirical evidence is a problem, and therefore this study will engage in primary data collection. According to Silvestre and Araújo (2012), the questionnaire will consist of a set of questions, properly thought out and structured, which can be closed or open questions. For simpler questions, closed questions will have the advantage of facilitating the data entry process; however, open questions will, in certain situations, allow for more complete answers and more information, thus enabling a deeper analysis. With the use of the questionnaire and closed questions it will be possible to obtain a standardization of the answers.

Additionally, an experimental approach is used. Since the topic is still unknown amongst the general public and regulatory options are still open, I explore several alternative formulations of the consumer decision problem. Research in behavioural economics has shown that the way the decision is presented in terms of default options makes a difference for final outcomes. Also, information on the social impacts of decisions can also be behaviourally relevant. I will next briefly explore research that helped me design the experimental part of the questionnaire.

5.2 Experimental approach

Experimental Economics consists of applying experimental methods to economics in order to verify existing economic theories or to propose new ones. Additionally, through experimental economics it is possible to empirically test whether economic theories hold true and to verify the effects of a given policy before implementing it. The experimental economics method implies that decisions that participants in economic experiment make are incentivized. In the research in this dissertation, while I use an experimental methodology, the decisions are not incentivized, even though the design is inspired by research in behavioural economics using the experimental economics methodology.

According to Mullainathan and Thaler (2000), behavioural economics consists of combining psychology and economics to study what happens in markets when agents have certain human limitations and complications. According to the authors, the fact that humans have limited rationality means that they also have limited cognitive abilities, and this has a negative impact on human problem solving. In addition, limited willpower sometimes causes people to make choices that are not in their long-term interest, as in the case of savings where this lack of willpower causes people to never start saving. Finally, limited self-interest shows that human beings are often willing to sacrifice their own interests to help others. That said, and still following the authors' reasoning, these three concepts can and are often applied to different topics in Economics, as is the case of savings, as mentioned next. This research will inform how I will design my own study on data portability.

Through the article by Thaler and Benartzi "Save More Tomorrow: Using behavioural economics to Increase Employee Saving" (2004), it is possible to see the impact and importance that behavioural economics can have in improving individual welfare. Using an experimental economics methodology, the authors were able to design a saving program that harnessed the power of behavioural economics, to increase savings of the workers who participated. Indeed, through this program their savings were quadrupled, thus improving their future welfare.

Furthermore, people being informed by a financial advisor or by letter about the importance of saving and its advantages was also a very important aspect for the success of the program. This feature of the experiment allowed participants to have access to information they would not otherwise have received and be swayed to make decisions that are more informed, Thus, one key issue that I address in my empirical study involves informing people about some issues about data portability, which may have an important and significant impact in the future behaviour of individuals towards data portability.

Another feature of the experimental design by Thaler and Benartzi (2004) is the exploration of the status quo bias, which is a type of behavioural bias. Behavioural biases consist of irrational beliefs or behaviours that can influence our decision-making unconsciously.

According to Samuelson and Zeckhauser (1988), Masatlioglu and Ok (2005) and Pfarr and Gregory (2010), in the last decades considerable amounts of experimental data on individual choice behaviour have been obtained. Among these regularities, there is the observation that, relative to other alternatives, a current choice or a default option is often evaluated by individuals, and this phenomenon is the status quo bias. In addition to the status quo bias and potentially just as important, there is the confirmation

bias that describes how people naturally favor information that confirms their prior beliefs over information that is properly justified.

Specifically, the status quo bias implies that individuals are less likely to switch from a default option to another different option, not due to preferences for one option over the other, but simply to avoid moving from the initial condition, i.e. the status quo. For the savings program by Thaler and Benartzi (2004), when individuals were enrolled in the savings program, they were less likely to opt out, than to opt in when not enrolled. For the case of data portability, I can hypothesize there may be a status quo bias towards the default condition that the regulator chooses, this means that consumers are likely to accept the default choice. As a control I imagine a situation where consumers need to actively indicate if they wish to opt out or opt into the scheme (treatment conventional decision). If the regulator defines that the default is that not data is shared, consumers need to actively indicate they wish for data to be shared, that is consumers can opt into the scheme (treatment opt in decision). If the regulator defines that the default is data portability, consumers have the option to opt out and indicate they wish to be left out of the scheme (this will be treatment opt out decision).

In this dissertation, the first hypothesis will concern preferences for data portability in general:

Hypothesis 1 (preferences towards data portability): Consumers prefer their data to be shared.

The alternative hypothesis will be completely the opposite, i.e. consumers prefer their data not to be shared.

The second hypothesis concerns an experimental test of the status quo bias in terms of how the decision is presents. It concerns the establishment or not of a default choice and how it affects choices. This hypothesis will involve a randomly allocation of respondents to the three treatments outlined above.

Hypothesis 2 (status quo bias): The presentation of the decision makes a difference for the choice of data portability.

The alternative hypothesis is that consumers are not swayed by the existence of a default and in a given sample, I should observe the same preference for data portability regardless of treatment.

As far as the experimental treatments are concerned, I will also test information effects, that is, how people react when they have information and when they don't have it. After the initial question about preference towards data portability, four treatments will be randomly attributed to respondents of the "opt in decision treatment", and they will read different information about data portability and privacy.

Specifically I consider the following treatments:

i. Treatment personal benefits of data portability will expose respondents to information about the personal benefits from data portability.

ii. Treatment personal disadvantages of data portability will expose respondents to information about the personal disadvantages from data portability.

iii. Treatment social benefits of data portability will expose respondents to information about the social benefits from sharing information with firms.

iv. Treatment social costs of data portability will expose respondents to information about social disadvantages from sharing information with firms.

Then, respondents will need to answer again a question about their preferences towards data portability.

Hypothesis 3 (impact of information): Information about benefits or costs and risks has an impact on preferences for data portability.

The alternative hypothesis is that information will have no impact on consumer choices. This can be tested by comparing the response before exposure to information and after exposure to information.

5.3 Questionnaire design

As previously mentioned, I will utilize a questionnaire to investigate consumers' behaviour and perceptions regarding data sharing, and also explore their understanding of big data and GDPR to determine if individuals are aware of the barriers imposed by data and its implications for competition. Additionally, I will conduct an experimental treatment to examine if the presentation of decisions and the information provided have an impact on individuals' choices.

In addition to understanding what people know and what they think about the topic, I will also do a socioeconomic characterization of respondents, such as age, gender or financial situation.

Below, in figure 1, is the outline of the structure of the questionnaire, as well as the description of what is investigated during its course.

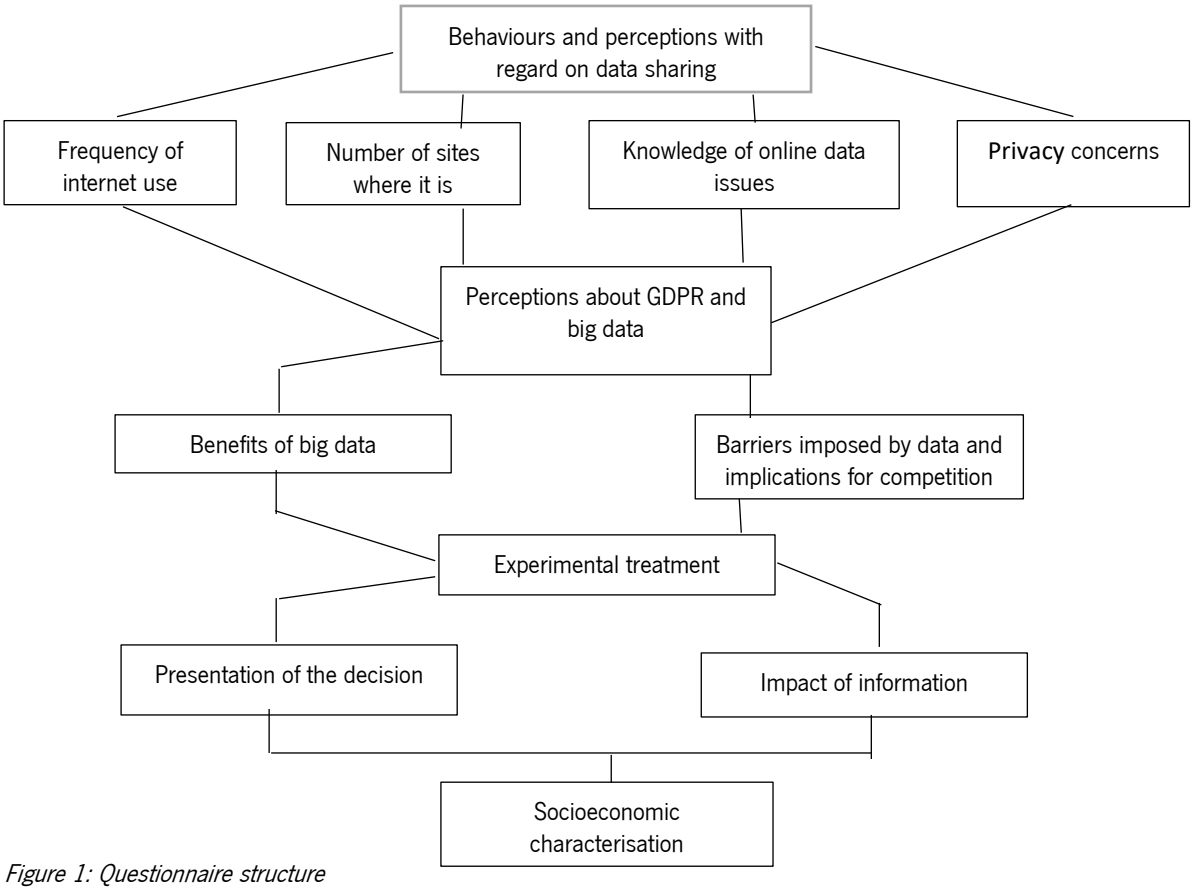


Figure 1: Questionnaire structure

The list of topics below corresponds to the points explored in the questionnaire.

Section1: Perceptions and behaviours

Behaviour and perceptions on data sharing:

This initial section endeavours to gain insights into individuals' attitudes towards sharing personal information and data, as well as their level of knowledge on the topic. Additionally, the concept of privacy is explored in this section. I seek to comprehend people's concerns about their privacy when browsing the internet, making online purchases, or providing their information to companies. Table 3 lists the questions posed to investigate these behaviours and perceptions.

Table 3: Questions on behaviour and perceptions on data sharing

Question
1. How often do you use the Internet for shopping? • Every day • Several times per week • Several times per month • Once a month or less • Never Source: Own elaboration
2. How many sites (retail and other) are you registered on (i.e. have you shared information such as name, contact details etc.)? • None • 1-5 • 6-10 • More than 10 Source: Own elaboration
3. Knowledge of online data issues. [response scale: a) I've heard of it and understand what it is; b) I've heard of it, but don't understand what it is; c) never heard of it] • Have you ever heard of computer cookies? • Have you heard of the General Data Protection Regulation (GDPR)? • Have you heard about the importance of data for businesses in digital markets? • Have you heard of the consumer right to data portability? • Have you heard of the implications of exclusive access to data by a company? Source: Own elaboration
4. Please indicate your degree of agreement with the following statements. [scale: 1: strongly disagree, 2: tend to disagree, 3: neither agree nor disagree, 4: tend to agree, 5: strongly agree] • I care about the privacy of my information when I shop online. • I trust companies to use my private online information in ways that will not harm me. • I read the privacy policies when using each website. • I prefer to shop online rather than in the physical shop. • I am aware that in order to obtain some (free) digital services and facilitate purchases, I need to provide data about myself. Source: Own elaboration
5. Please indicate your degree of agreement with the following statements. [scale: 1: strongly disagree, 2: tend to disagree, 3: neither agree nor disagree, 4: tend to agree, 5: strongly agree]. • I care about my privacy when I surf the Internet. • I don't like being asked for too much personal information when I register on a website or make a purchase online. • I would feel more comfortable if I knew how companies were going to use my personal information. • I would be willing to prohibit my information from being shared/sold to other companies if that were a possibility. Source: adapted from Li and Liaw (2017)

Perceptions on GDPR:

Given the relevance of data sharing, it is crucial to acknowledge the impact of the General Data Protection Regulation (GDPR). Therefore, the questionnaire includes a section to assess whether individuals feel more secure with the implementation of the GDPR. Additionally, the concept of big data is explored to determine if individuals view the utilization of their personal information by companies as beneficial.

Before the questions are presented the following text is shown explaining what the GDPR consists of, to ensure all respondents are aware of this background information.

"The General Data Protection Regulation (GDPR), implemented on 25 May 2018, establishes a set of rules regarding the protection of data of natural persons, data that will be processed by a person, a company or an organisation. Under the GDPR, all organisations that process personal data of European citizens will have to comply with this regulation. The personal data that the GDPR protects is information about a natural person that allows their identification, directly or indirectly, such as their name, tax identification number or mobile phone number."

The questions applied in the questionnaire can be seen in table 4.

Table 4: Questions on perceptions on GDPR

Question
6. On a scale of 1 (strongly disagree) to 5 (strongly agree), please indicate your level of agreement with the following statements. • With the implementation of the General Data Protection Regulation (GDPR) I feel safer surfing the Internet. • With the implementation of the General Data Protection Regulation (GDPR) I feel more comfortable sharing personal information with companies. Source: adapted from Li and Liaw (2017)
7. Today, computing and data storage capabilities allow companies to create large databases of detailed information about consumers, the so-called "big data". Do you consider big data beneficial? • Yes, beneficial only for companies. • Yes, but more beneficial for companies than for consumers. • Yes, equally beneficial to businesses and consumers. • Yes, but more beneficial to consumers than to businesses. • Yes, beneficial only for consumers. • Neither for consumers nor for businesses. • I do not know. Source: Own elaboration
8. Please indicate your degree of agreement with the following statements. [scale: 1: strongly disagree, 2: tend to disagree, 3: neither agree nor disagree, 4: tend to agree, 5: strongly agree] • I am confident that companies use my information only for business purposes. • Access to consumer data allows companies to improve their advertising.

• Companies' access to consumer data allows them to understand consumers' willingness-to-pay for each good. • Access to consumer data by firms allows them to offer different prices to different consumers. • Access to consumer data by firms can harm consumers. Source: Own elaboration
9. Please indicate your level of agreement with the following statements regarding the use of consumers' personal data by companies: [scale: 1: strongly disagree, 2: tend to disagree, 3: neither agree nor disagree, 4: tend to agree, 5: strongly agree]. • For companies to offer each consumer a different price (so-called personalised pricing). • For companies to provide recommendations adapted to the consumer's profile and preferences. • For companies to provide recommendations adapted to the consumer's needs. Source: Own elaboration

Perceptions on barriers imposed by data and implications for price competition:

I consider a single question, also embedded in the first section of the questionnaire.

As discussed in the literature review, when a single company has exclusive access to consumer data, it can provide a significant advantage over competitors who lack such access. This can create entry barriers for new players in the market. Therefore, this question aims to investigate how people perceive the impact of data access on competition and prices.

The question is presented in table 5.

Table 5: Questions on perceptions of data-imposed barriers and implications for price competition

Question
10. Consider the case where firms in a market have been collecting information on their consumers for a long time: this is called exclusive access to data, because new firms will not have this information when they enter the market. This means that existing companies have an information advantage. On a scale of 1 (strongly disagree) to 5 (strongly agree), please indicate your level of agreement with the following statements. • Exclusive access to data by some companies can be a barrier to new entry and increased competition in the market. • Exclusive access to data is healthy for competition in the market. • Exclusive access to data helps companies increase their market share. • Companies with access to consumer data benefit more than those without access to consumer data. Source: Own elaboration

Section 2: Right to data portability – experimental treatments

Right to Data Portability:

This second section is about the Right to Data Portability in the context of the GDPR and is where the experimental treatments will take place, that is, it will be in this section that I will test the impact of the information and try to understand if the way the decision is presented influences the choice to share the data or not.

Firstly, the following introductory text on the Right to Data Portability is provided.

"This section is about the "Right to Data Portability": When a company collects data about you, such as your personal data (e.g. name, IP address, a cookie identifier and purchasing behaviour), it can retain it and use it to make marketing decisions (pricing, advertising, recommendations, etc.). Conversely, new companies will not have this information if they decide to enter a market and will be at a disadvantage. It is likely that some will not start their business at all, which reduces competition in that particular market.

The Right to Data Portability gives citizens the right to request that their personal data is transferred from one company/service/platform to another company so that it can be used again. The details of how this will be implemented in practice and in each country are still being discussed."

Next, in order to study how people react to the way the decision is presented, individuals are randomly assigned to the following three branches:

Section 2: Conventional decision

In the first situation, which can be labelled as "Conventional decision", it is up to the individual to choose whether or not they want their data to be shared.

The wording of the question was as follows:

"Consider that you have the right to make decisions about your data held by companies. It is possible that the future regulation will establish that for each company you will have the option to share your data with other companies or not. Each consumer will have to take the time to contact each company and fill in a form with their preference."

How would you choose?

a) *I would choose to have my personal data from one company shared with another competitor in the same market.*

b) *I would choose for my personal data of a company not to be shared with another competitor in the same market.*

c) *I do not know.*

Also within the Conventional Decision the following question was asked (in different screen):

"Please indicate your preference in terms of future regulation of data portability in your country."

a) *prefer to decide for each company whether my data is shared (with competitors and new companies) or not.*

b) *prefer that the regulation states that companies cannot share my information (with competitors and new companies) and that I need to give permission for each company to share.*

c) *would prefer that the regulation force companies to share my information (with competitors and new companies) and that I have the right to contact each company not to do so.*

d) *Don't know.*

Section 2: Opt in decision

In the second situation, labelled "Opt in decision", by default data is not shared between companies and it is up to the consumer to say that they want their data to be shared.

The wording of the Opt in decision question was as follows:

"Consider that the regulator has established that, by default, data (such as your personal data) is not shared between companies. However, each consumer has the option to tell each company that they want the company to share their data with other companies.

In these circumstances, when your data is not shared between companies, would you choose to ask companies to share it with other companies (by spending some time filling in a form, for example)?"

a) *Yes.*

b) *No.*

c) *I do not know.*

Section 2: Opt out decision

Finally, in the last situation, called the 'Opt out decision', by default data is shared between companies and it is up to the consumer to decide that they do not want their data to be shared.

The wording of the Opt out decision question was as follows:

"Consider that the regulator has established that, by default, data (such as your personal data) must be shared between companies. However, each consumer has the option to tell each company that they do not want it to share their data with other companies.

In these circumstances, when your data is shared between companies, would you choose to ask companies not to share it with other companies (by taking the time to fill in a form, for example)?"

a) Yes.

b) No.

c) Don't know.

Since the Qualtrics platform was used to carry out the questionnaire, it was possible to divide each of these situations by one third of the people who answered the questionnaire.

After understanding how people react to the way the decision is presented, I studied the impact that the information has on them. To do this, and once again thanks to Qualtrics, which allows us to do this, the people who were asked the Opt in decision question were equally distributed over four branches. These branches presented information on the personal and social benefits of data portability, as well as the personal and social disadvantages of data portability.

The first text concerns the **personal benefits of data portability.**

"Sharing data between companies allows you not to have to re-enter information or copy data for new services. It allows you to be sent recommendations, products or services that are more personalised, better targeted to your needs and preferences, and sometimes you will be charged lower prices and have access to better deals."

The second text concerns the **personal disadvantages of data portability**.

"Sharing data between companies allows you to be sent more personalised recommendations, products or services, exploring your needs and preferences. Sometimes you may be charged higher prices. You will also lose some privacy, as all companies in the market will have access to your information."

The third text concerns the **social benefits of data portability.**

"Without information sharing between companies in the market, one company will be dominant and it is possible that some competitors will be forced out of the market. Sharing data between companies will increase competition, which means that consumers in general are likely to be charged lower prices and have access to better deals."

The fourth text concerns the **social disadvantages of data portability.**

"Sharing data between businesses allows more personalised recommendations, products or services to be sent to consumers, exploring their needs and preferences. Prices and offers are likely to differ between consumers, as companies will know more about consumers' preferences and tastes. In general, consumers will lose some privacy, as all companies in the market will have access to their information."

After reading one of the four texts respondents were asked the following question:

"In regulatory circumstances where your data is not shared between companies, would you choose to ask companies to share your data with other companies (by spending some time to fill in a form, for example)?"

a) Yes.

b) No.

c) Don't know.

Section 3: Respondent characteristics

Finally, the third and last section of the questionnaire provides a socio-economic characterisation of the respondents.

The questions asked in this section can be seen in table 6.

Table 6: Questions of socioeconomic characterisation

Question
1. Age • Up to 18 years old • 19 to 24 years old • 25 to 34 years old • 35 to 44 years old • 45 to 54 years old • 55 to 64 years old

• Over 65 years old Source: Own elaboration
2. Gender • Male • Female • Other Source: Own elaboration
3. Nationality (Open answer) Source: Own elaboration
4. What is your current occupation? • Student • Employee • Unemployed • Retired • Other Source: Own elaboration
5. Highest level of complete education? • No formal studies • 1st cycle (up to 4th grade) • 2nd cycle (up to 9th grade) • Secondary education • Higher education Source: Own elaboration
6. On a scale of 1 (I live comfortably financially) to 5 (I have a lot of financial difficulties), how would you assess your situation? Source: Own elaboration

5.4 Implementation

The questionnaire was prepared on the Qualtrics platform and administered through a convenience sample. The questionnaire was translated into Portuguese and its dissemination was done in Portugal through email and social networks such as instagram, facebook and whatsapp, and was opened for data collection on March 6, 2023 and closed on March 15, 2023.

Regarding the data analysis, descriptive statistics will be employed to describe and summarize the collected data.

6. Results analysis

This chapter will present and analyse the answers to the questionnaire. Firstly, the sample will be characterized by sociodemographic information, such as age, gender, nationality, level of education, etc.

Afterwards, the analysis of the questions applied to the respondents will be carried out in order to understand their behaviours and perceptions about sharing data with companies and their perceptions about the GDPR. In addition I will also try to find out whether people perceive the barriers imposed by data and the implications in terms of price competition.

The analysis of the experimental treatments will also be done in this chapter.

6.1 Characterisation of the sample

A total of 166 valid answers were collected, which constitute the sample for this study. Since the questionnaire was shared with students from the University of Minho, with relatives and friends, it is a convenience sample, which is part of non-random or non-probabilistic sampling techniques. From a theoretical perspective, to understand perceptions and behaviour of the general population, a random sample would be required, preferably representative of that population. As the topic under research is still underexplored with no previous studies in terms of empirical applications, the option was to undertake an exploratory study.

Most of the surveyed population is in the 19 to 24 age bracket, corresponding to 67.5% of the sample, followed by the interval of 35 to 44 years (12%), 45 to 54 years (9%) and 25 to 34 years (6.6%).

It was possible to verify a predominance of women in the sample, corresponding to 65.7% as opposed to 34.3% of men.

The majority of the respondents, 92.2% of the sample, are Portuguese, while 7.8% of the sample comprises individuals of other nationalities, including Brazilian, Cape Verdean, Mozambican, Guinean, and Santomense. This distribution is understandable given that the questionnaire was administered in Portuguese.

Out of the total respondents, 64.5% were students, 27.7% were employed and only 1.8% were unemployed. It is worth nothing that the respondents have a high academic level, with 54.8% of them answering that higher education is the highest level of education completed, followed by secondary education with 40.4% of the answers.

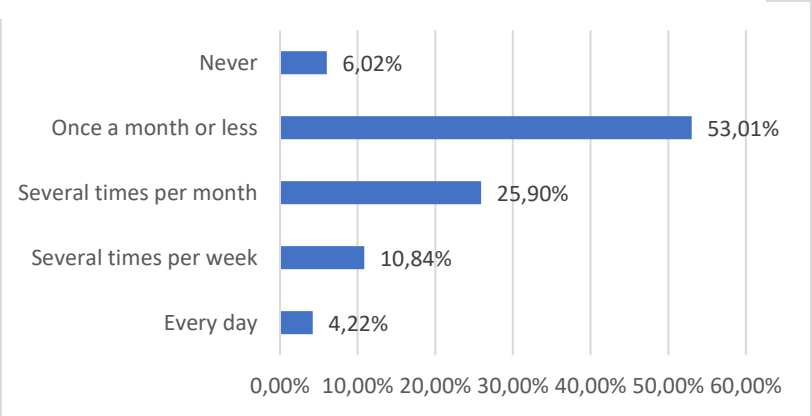
Finally, with regard to financial comfort only 5.4% claimed to have many financial difficulties.

6.2 Internet shopping habits

One of the objectives of this section was to explore the respondents' online shopping habits. The results indicate that only a small percentage (6.02%) of respondents reported never using the Internet for shopping. Among the respondents who do use the Internet for shopping, the majority (53.01%) reported shopping online once a month or less.

Furthermore, 25.90% of respondents reported shopping online several times a month, while 10.84% reported using the Internet for shopping several times a week. Only a small proportion (4.22%) of respondents reported using the Internet for shopping every day. These results are presented graphically in graph 1.

Graph 1: Frequency of internet use for shopping



Note: 166 observations

Regarding the number of sites where respondents are registered and share personal information, 6.63% of respondents reported not being registered in any site. This is similar to the percentage of respondents who do not shop online. On the other hand, 48.80% of respondents reported being registered in 1 to 5 sites, while 27.11% reported being registered in 6 to 10 sites. A proportion of respondents (17.47%) reported being registered in more than 10 sites.

When doing an independence test between these shopping patterns and the sex of respondents, it was concluded that there is no relationship since the test statistic chi2(4)=2.0497 and pvalue=0.727. It can be seen that 2.8% of women claim to shop online every day and 53.2% claim to shop online once a month or less. For men, 7% say they shop online every day and 53% say they shop online once a month or less.

6.3 Knowledge of online data issues

Through this section I intend to understand what respondents know about online data as well as data portability.

Table 7 shows the results obtained.

Table 7: Knowledge of online data issues

Category	I have heard of it, and I understand what it is	I´ve heard of it, but I don´t understand what it is	I´ve never heard of it
Have you heard of computer cookies?	88 (53,01%)	73 (43,98%)	5 (3,01%)
Have you heard of General Data Protection Regulation (GDPR)?	106 (63,86%)	44 (26,51%)	16 (9,64%)
Have you heard of the importance of data for companies in digital markets?	108 (65,06%)	40 (24,10%)	18 (10,84%)
Have you heard of consumer´s right to data portability?	71 (42,77%)	58 (34,94%)	37 (22,29%)
Have you heard of the implications of exclusive access to data by a company?	60 (36,14%)	56 (33,73%)	50 (30,12%)

Note: 166 observations

Regarding computer cookies, 96.99% of respondents, have heard about it. However, only 53.01% understand what it is.

In terms of the General Data Protection Regulation and the importance of data for businesses in digital markets, respondents' knowledge follows the same pattern as their knowledge about computer cookies, where almost the entire sample has heard about it, and the majority indicate that they understand it. On the importance of data for businesses in digital markets, 65.06% of respondents reveal they have heard of it and understand what it is.

By doing an independence test between the age of the respondents and whether or not they had heard of the GDPR it was concluded that there is a relationship since the test statistic chi2(2)=14.7001 and the pvalue=0.001. It was possible to verify that 54.7% of the respondents who have heard about the GDPR and know what it is, are under 25 years old. In turn, by performing an independence test between the sex of the respondents and whether or not they had heard of the GDPR, it was concluded that there is a relationship since the test statistic chi2(2)=9.1109 and the pvalue=0.011. It was found that 96% of men have heard of the GDPR and 87% of women have also heard of the GDPR. This seems to suggest that sex and age can have an impact on whether or not people have heard of GDPR.

The results of the independency test are presented in the tables 8 and 9.

Table 8: Independence test between young people and GDPR knowledge

Have you heard of GDPR?	People aged 25 and older	People under 25 years old	Total
I have heard of it and I understand what it is.	42	64	106
I've heard of it, but I don't understand what it is.	6	38	44
I've never heard of it.	1	15	16
Total	49	117	166

Pearson chi2(2) = 14,7001 Pr = 0.001

Table 9: Independence test between sex and GDPR knowledge

Have you heard of GDPR?	Women	Men	Total
I have heard of it and I understand what it is.	61	45	106
I've heard of it, but I don't understand what it is.	34	10	44
I've never heard of it.	14	2	16
Total	109	57	166

Pearson chi2(2) = 9.1109 Pr = 0.011

It is important to stress that, when asked about the consumer's right to data portability, 22.29% of the respondents had not heard of this right, which is different from the other concepts where practically all respondents had heard of them. 77.71% of respondents had heard about the consumer's right to data portability, and of those 42.77% understand what it is, and 34.94% have heard of it but do not understand what it is. At this stage in the questionnaire, these responses are perceived knowledge, as I cannot verify if they indeed know that data portability is and are not mistaking for other concepts.

Finally, with regard to the question "Have you heard of the implications of exclusive access to data by a company?", 30.12% state that they have never heard of these implications. In the remaining respondents who have heard of it, there is a balance between those who understand what it is, and those who do not (again as far as unverifiable claims are concerned).

6.4 Privacy and data sharing concerns

One of the objectives of this section in the questionnaire is to understand if respondents are concerned about their privacy when surfing the internet or shopping online. In addition, this section was also used to understand whether they feel comfortable and secure when sharing their data and personal information with companies.

The questions asked and the results obtained are shown in table 10 below and illustrated in graph 2.

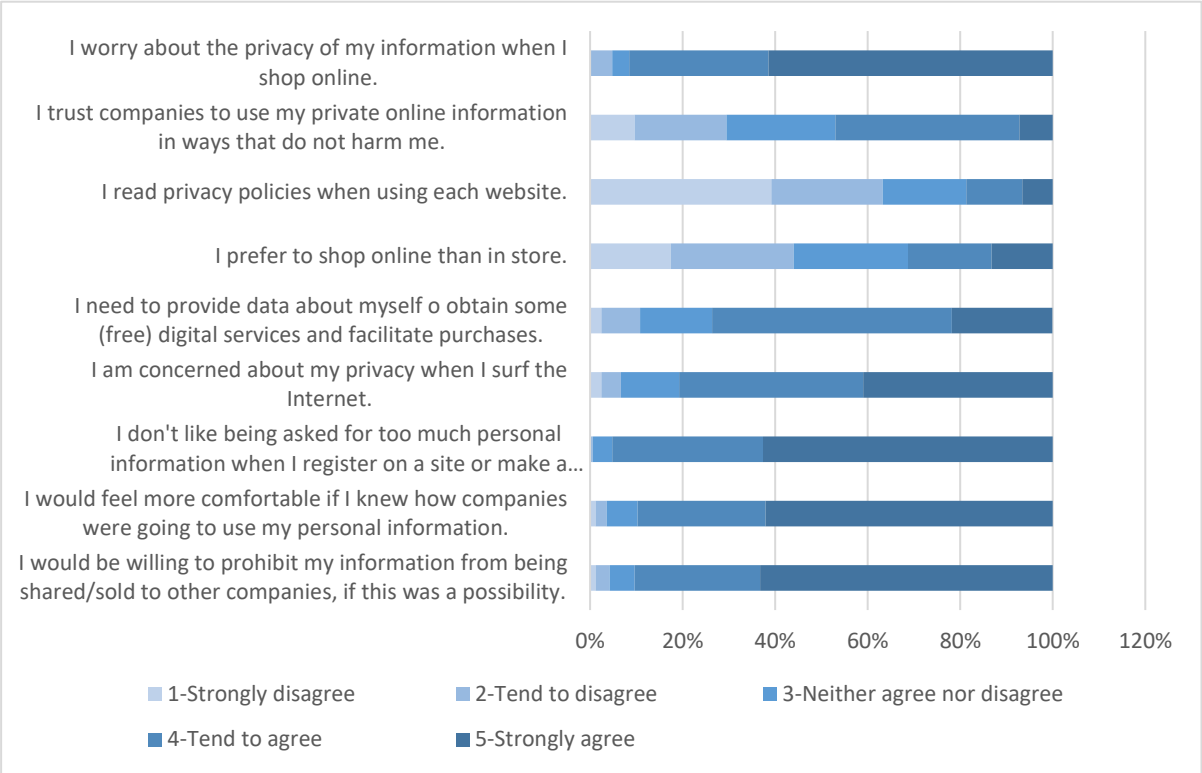
Table 10: Level of agreement on privacy and data sharing concerns

Category	1	2	3	4	5	Mean/ Std.dev	Median
I worry about the privacy of my information when I shop online.	0 (0%)	8 (4,82%)	6 (3,61%)	50 (30,12%)	102 (61,45%)	4,48/ 0,7841	5
I trust companies to use my private online information in ways that do not harm me.	16 (9,64%)	33 (19,88%)	39 (23,49%)	66 (39,76%)	12 (7,23%)	3,15/ 1,1207	3
I read privacy policies when using each website.	65 (39,16%)	40 (24,10%)	30 (18,07%)	20 (12,05%)	11 (6,63%)	2,23/ 1,2680	2
I prefer to shop online than in store.	29 (17,47%)	44 (26,51%)	41 (24,70%)	30 (18,07%)	22 (13,25%)	2,83/ 1,2869	3
I am aware that in order to obtain some (free) digital services and facilitate purchases, I need to provide data about myself.	4 (2,41%)	14 (8,43%)	26 (15,55%)	86 (51,81%)	36 (21,69%)	3,82/ 0,9489	4
I am concerned about my privacy when I surf the Internet.	4 (2,41%)	7 (4,22%)	21 (12,65%)	66 (39,76%)	68 (40,96%)	4,13/ 0,9546	4
I don't like being asked for too much personal information when I register on a site or make a purchase online.	0 (0%)	1 (0,60%)	7 (4,22%)	54 (32,53%)	104 (62,65%)	4,57/ 0,6061	5
I would feel more comfortable if I knew how companies were going to use my personal information.	2 (1,20%)	4 (2,41%)	11 (6,63%)	46 (27,71%)	103 (62,05%)	4,47/ 0,8215	5

I would be willing to prohibit my information from being shared/sold to other companies, if this was a possibility.	2 (1,20%)	5 (3,01%)	9 (5,42%)	45 (27,11%)	105 (63,25%)	4,48/ 0,8292	5

Note: 166 observations, 1-Strongly disagree, 2-Tend to disagree, 3-Neither agree nor disagree, 4-Tend to agree, 5-Strongly agree

Graph 2: Level of agreement on privacy and data sharing concerns



In relation to the statement "I worry about the privacy of my information when I shop online" almost all respondents (91.57%) agree with this statement, which shows that they are indeed concerned about the privacy of their information. Additionally, almost 90% agree that they would feel more comfortable if they knew how companies were going to use their personal information.

However, concerning the statement "I trust companies to use my private online information in ways that do not harm me", 29.52% disagreed, contrary to the 46.99% who agreed.

Regarding the reading of privacy policies, only 18.68% of respondents agree that they read them on each site they visit, as opposed to 63.26% who claim not to read the privacy policies of the sites they visit.

With regard to the statement "I prefer to shop online than in store", it can be seen that 31.32% of respondents prefer to shop online, while 43.98% prefer to shop in a physical shop. The fact that the number of respondents who prefer to shop in physical shop is higher than those who prefer to shop online

may be due to the fact that they are concerned about the privacy of their information when shopping online, hence they shop in physical shops.

By doing an independence test it was possible to verify that 31.6% of people under 25 prefer to shop online rather than in a physical store, contrary to the 40% of people under 25 who prefer to shop in a physical store rather than online. For people aged 25 and older, the majority (53%) say they prefer to shop in physical stores.

The results of the independence test can be seen in table 11.

Table 11: Independence test between young people and place of purchase

Variables	**Young people (1-people under 25, 0-people aged 25 and older)**
I prefer to shop online rather than in a physical store.	Pearson chi2(4) = 7.5591 Pr = 0.109

Notes: levels of statistical significance

*** p<0.01, ** p<0.05, * p<0.1

In the statement "I am aware that in order to obtain some (free) digital services and facilitate purchases, I need to provide data about myself", most respondents show agreement with the statement (73.5%).

With the statement "I am concerned about my privacy when I surf the Internet" the respondents show once again that they are concerned about their privacy since 80.72% agree with this statement, as opposed to 6.63% who disagree. It is also possible to verify that women and men are equally concerned about their privacy when surfing the internet (81%).

When the respondent is asked for too much personal information when registering on a website or making an online purchase, 95.18% stated that they do not like to be asked for such information. In turn, 89.76% of respondents said they would feel more comfortable if they knew how companies were going to use their personal information, in contrast to the 3.61% who disagreed with the statement "I would feel more comfortable if I knew how companies were going to use my personal information".

Finally, concerning the statement "I would be willing to prohibit my information from being shared/sold to other companies, if this was a possibility", 90.36% of the respondents agreed with the statement, contrary to only 4.21% who disagreed with this statement. This statement is an indication that when confronted with the possibility of data portability, these respondents are likely to not support the practice

(regardless of how the decision is framed. Moreover, almost all respondents express concerns about privacy and how firms used their private information.

6.5 Respondent´s perceptions of GDPR

In this section, the aim is to understand respondents' perceptions of the General Data Protection Regulation, namely whether respondents feel safer surfing the Internet and sharing information with companies after the implementation of the GDPR. To ensure respondents understood what this regulation was and its implications, a short description was provided.

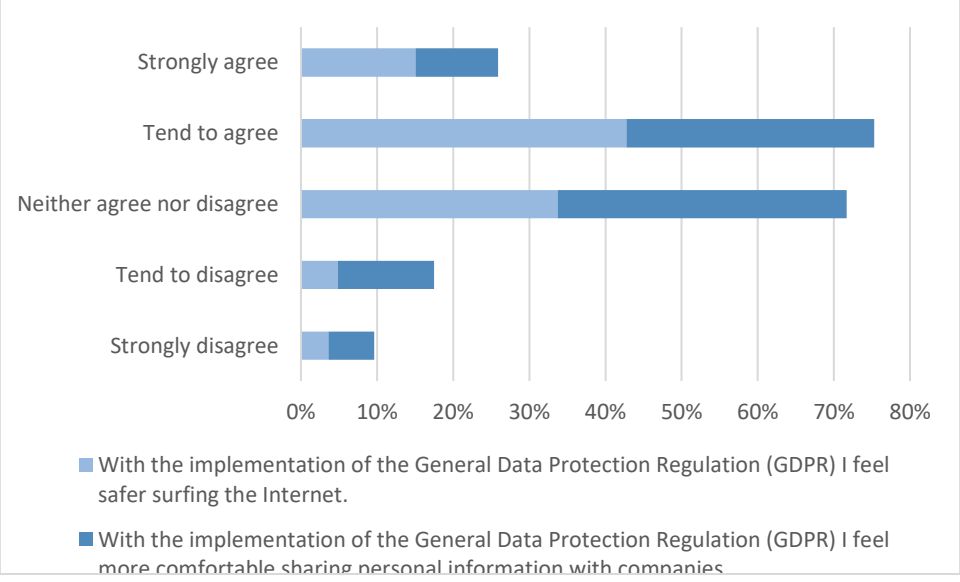
The results obtained are shown in table 12 and illustrated in graph 3.

Table 12: Respondent´s perception of GDPR

Category	1	2	3	4	5	Mean/ Std.dev	Median
With the implementation of the General Data Protection Regulation (GDPR) I feel safer surfing the Internet.	6 (3,61%)	8 (4,82%)	56 (33,73%)	71 (42,77%)	25 (15,06%)	3,61/ 0,9262	4
With the implementation of the General Data Protection Regulation (GDPR) I feel more comfortable sharing personal information with companies.	10 (6,02%)	21 (12,65%)	63 (37,95%)	54 (32,53%)	18 (10,84%)	3,30/ 1,0226	3

Note: 166 observations, 1-Strongly disagree, 2-Tend to disagree, 3-Neither agree nor disagree, 4-Tend to agree, 5-Strongly agree

Graph 3: Respondent´s perception of GDPR



After being presented with an explanation of the GDPR, 57.83% agreed that they felt safer surfing the Internet with the implementation of the GDPR, contrary to 8.43% who said they did not feel safe even with the implementation of the GDPR.

In addition, respondents were also asked whether they felt more comfortable sharing personal information with companies after the implementation of the RGPD. That said, 43.37% revealed feeling more comfortable, while 18.67% still did not feel comfortable sharing personal information with companies even with the implementation of the RGPD.

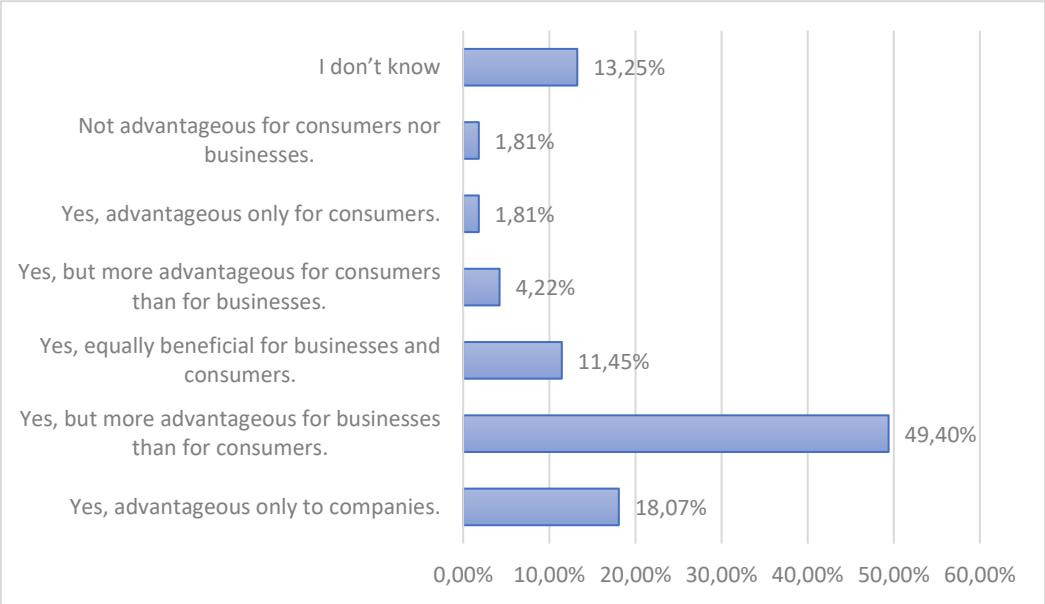
6.6 Benefits and uses of big data

This section is intended to analyse the potential benefits of big data and understand if the respondents know and understand these benefits.

After providing a brief description of what big data is, respondents were asked if they believed it was beneficial. As shown in graph 4, 49.4% of respondents think big data is beneficial, but more so for businesses than for consumers, while 18.07% think it is only beneficial to businesses. This means that about 70% of respondents see greater benefits for firms. On the other hand, 11.45% of respondents find big data equally beneficial for both businesses and consumers. Furthermore, 4.22% of respondents believe that big data is more beneficial for consumers than for companies, and 1.81% who think it is only advantageous for consumers. Finally, 1.81% of respondents do not consider big data beneficial, and 13.25% claim not to know.

Through an independence test (table 13) it is possible to verify that 47% of men think that big data is more advantageous for companies than for consumers, and 50% of women also have the same opinion. In turn, this test of independence further shows that the benefits of big data and sex are independent.

Graph 4: Big Data benefits: firms vs consumers



Note: 166 observations

Table 13: Independence test between big data benefits and sex

Big data benefits	Women	Men	Total
Yes, advantageous only for companies	17	13	30
Yes, but more advantageous for businesses than for consumers.	55	27	82
Yes, equally beneficial for businesses and consumers.	12	7	19
Yes, but more advantageous for consumers than for businesses.	5	2	7
Yes, advantageous only for consumers.	1	2	3
Not advantageous for consumers nor businesses.	3	0	3
I don´t know.	16	6	22
Total	109	57	166

Pearson chi2(6) = 4.7517 Pr = 0.576

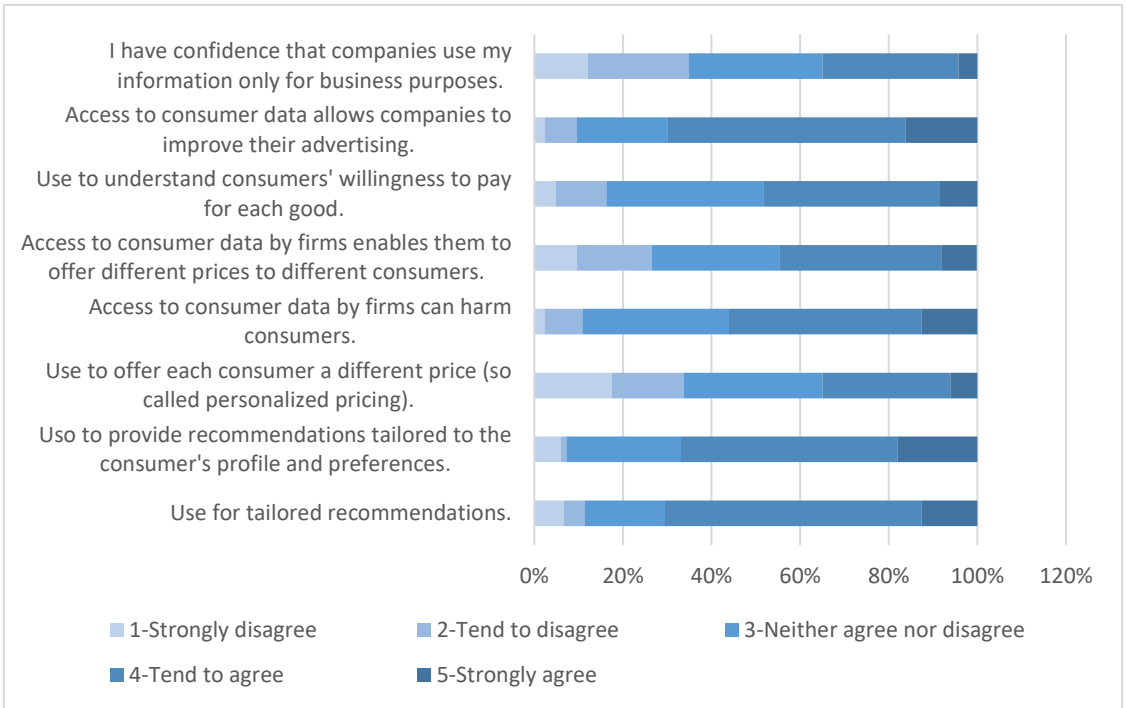
To understand the perceptions of respondents regarding the use of this data by companies I collected the data presented in table 14 and graph 5.

Table 14: Level of agreement on the use of consumer´s personal data by businesses

Category	1	2	3	4	5	Mean/SD	Median
I have confidence that companies use my information only for business purposes.	20 (12,1%)	38 (22,9%)	50 (30,1%)	51 (30,7%)	7 (4,2%)	2,92 / 1,1	3
Access to consumer data allows companies to improve their advertising.	4 (2,4%)	12 (7,2%)	34 (20,5%)	89 (53,6%)	27 (16,3%)	3,74 / 0,9	4
Companies' access to consumer data allows them to understand consumers' willingness to pay for each good.	8 (4,8%)	19 (11,5%)	59 (35,5%)	66 (39,8%)	14 (8,4%)	3,36 / 0,96	3
Access to consumer data by firms enables them to offer different prices to different consumers.	16 (9,6%)	28 (16,9%)	48 (28,9%)	61 (36,6%)	13 (7,8%)	3,16 / 1,1	3
Access to consumer data by firms can harm consumers.	4 (2,4%)	14 (8,4%)	55 (33,1%)	72 (43,4%)	21 (12,7%)	3,55 / 0,9	4
I agree with the use of data by businesses to offer each consumer a different price (so called personalized pricing).	29 (17,5%)	27 (16,3%)	52 (31,3%)	48 (28,9%)	10 (6,0%)	2,90 / 1,2	3
I agree with the use of data by businesses to provide recommendations tailored to the consumer's profile and preferences.	10 (6,0%)	2 (1,2%)	43 (25,9%)	81 (48,8%)	30 (18,1%)	3,72 / 0,98	4
I agree with the use of data by businesses to provide recommendations tailored to the needs of the consumer.	11 (6,6%)	8 (4,8%)	30 (18,1%)	96 (57,8%)	21 (12,7%)	3,65 / 0,99	4

Note: 166 observations, 1-Strongly disagree, 2-Tend to disagree, 3-Neither agree nor disagree, 4-Tend to agree, 5-Strongly agree

Graph 5: Level of agreement on the use of consumer´s personal data by businesses



Through the data collected it can be seen that 34.94% of respondents trust that companies use their personal information only for commercial purposes. In turn, the same percentage of respondents (34.94%), does not trust that companies use their personal information only for commercial purposes.

In terms of benefits for firms, many respondents are inclined to agree with benefits in terms of advertising (69.88%), understanding of consumer´s willingness to pay for each good (48,19% agree and 16,27% disagree), possibility of offering different prices to different consumer (44,4% agree and 26,51% disagree).

The statement "Access to consumer data by firms can harm consumers", received agreement from 56.02% of the respondents, while only 10.84% disagreed with it.

It is also possible to verify that 34.94% of respondents agree with the use of personal data by companies to offer each consumer a different price, while 33.74% disagree. In addition, while 66.87% of respondents tend to agree with the use of consumers' personal data by companies to provide recommendations tailored to the consumer's profile and preferences, 7.22% of them disagree. Finally, 70.48% of respondents say they agree with the use of consumers' personal data by companies to provide recommendations tailored to consumer needs, as opposed to 11.45% respondents who disagree.

6.7 Data barriers and price competition implications

In this section it was explained to respondents what exclusive access to data consists of. In this way, and with this explanation, the aim is to understand if they are aware of the potential barriers imposed by data and the implications this can have in terms of price competition.

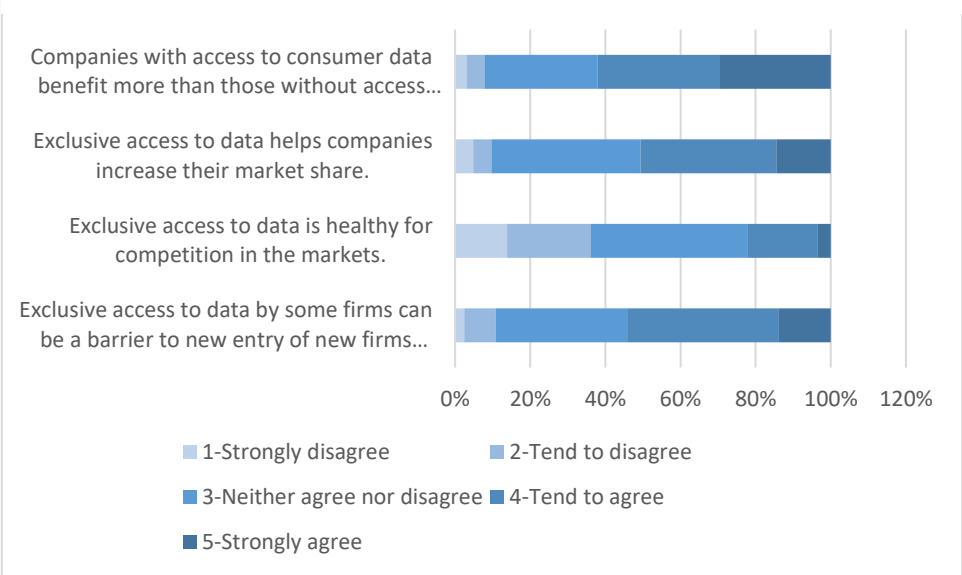
The table 15 and graph 6 shows the results obtained.

Table 15: Level of agreement on the data barriers and price competition implications

Category	1	2	3	4	5	Mean/ Std.dev	Median
Exclusive access to data by some firms can be a barrier to new entry of new firms and increased competition in the market.	4 (2,41%)	14 (8,43%)	58 (34,94%)	67 (40,36%)	23 (13,86%)	3,55/ 0,9182	4
Exclusive access to data is healthy for competition in the markets.	23 (13,86%)	37 (22,29%)	69 (41,57%)	31 (18,67%)	6 (3,61%)	2,76/ 1,0280	3
Exclusive access to data helps companies increase their market share.	8 (4,82%)	8 (4,82%)	66 (39,76%)	60 (36,14%)	24 (14,46%)	3,51/ 0,9645	4
Companies with access to consumer data benefit more than those without access to consumer data.	5 (3,01%)	8 (4,82%)	50 (30,12%)	54 (32,53%)	49 (29,52%)	3,81/ 1,0145	4

Note: 166 observations, 1-Strongly disagree, 2-Tend to disagree, 3-Neither agree nor disagree, 4-Tend to agree, 5-Strongly agree

Graph 6: Level of agreement on the data barriers and price competition implications



Through the results obtained, and with regard to exclusive access to data, it can be seen that respondents are inclined to agree that exclusive access to data by some companies can act as a barrier to new entry and decreased competition in the market (54.22% agree and 10,84% disagree) and that exclusive access to data helps companies increase their market share (50.6% agree and 9.64% disagree).

With regard to the fact that exclusive access to data is healthy for market competition, it can be seen that 22.28% of the respondents agree with this statement, contrary to the 36.15% of the respondents who do not find exclusive access to data healthy for market competition.

Finally, as can be seen in this same table, 62.05% of respondents think that companies with access to consumer data benefit more than those who do not have access to consumer data. In turn, the results obtained show that only 7.83% of respondents disagree with this statement.

By performing another test of independence it is possible to see that 58% of people under 25 years old consider that exclusive access to data by some companies can be an obstacle to the entry of new companies and increased competition in the market. In turn, of those under 25, only 23% consider exclusive access to data healthy for market competition. With regard to the fact that exclusive access to data helps companies increase their market share, 51% of individuals under 25 agree with the statement. Finally, 61% of individuals under 25 years old consider that companies with access to consumer data benefit more than those without access to consumer data, similar to the 65% of individuals 25 years old and older who also have this opinion. The results of the independence tests are present in table 16 and

it can be seen that there is only a relationship between "Young people" and "Companies with access to consumer data benefit more than those without access to consumer data."

Table 16: Independence test between young people and data barriers and price competition implications

Variables	Exclusive access to data by some firms can be a barrier to new entry of new firms and increased competition in the market.	Exclusive access to data is healthy for competition in the markets.	Exclusive access to data helps companies increase their market share.	Companies with access to consumer data benefit more than those without access to consumer data.
Young people (1- under 25 years old, 0- 25 years old and older)	Pearson chi2(4) = 3.19 Pr = 0.526	Pearson chi2(4) = 3.78 Pr = 0.437	Pearson chi2(4) = 2.99 Pr = 0.560	Pearson chi2(4) = 9.1 Pr = 0.059

6.8 Experimental treatments

In this section I will analyse the experimental treatments made in the questionnaire. First, I will analyse how individuals react to the way the decision is presented. Next, I will study the impact that the information has on respondents to understand if presenting information about the benefits will increase preferences for data portability and if presenting the risks will decrease preferences for data portability.

6.8.1 Presentation of the decision

As mentioned earlier in the methodology chapter, respondents were randomly assigned to three different situations.

Out of 166 respondents, 54 were assigned to the "Conventional decision", 55 to the "Opt in decision" and 57 to the "Opt out decision".

Table 17 shows a summary of the decisions in the different situations. For now I can see that a non-negligible share of respondents do not have an opinion.

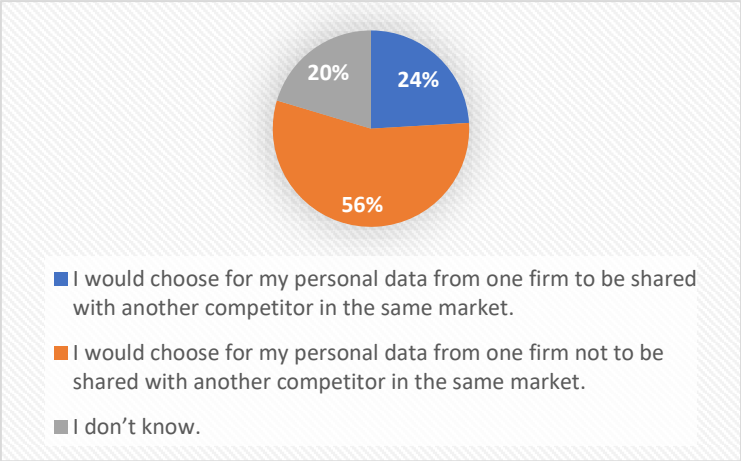
Table 17: Summary of decisions

Category	Conventional decision (n=54)	Opt in decision (n=55)	Opt out decision (n=57)
I would choose data sharing	24%	11%	7%
I would not choose data sharing	56%	64%	79%
Don´t know	20%	25%	14%

a) Conventional Decision

According to graph 7, when where respondents choose whether or not to share their data with companies and no situation is defined by default, 56% reveal they would choose not to share their personal data from one company with another competitor in the same market, while only 24% of respondents would choose to share their data with another competitor in the same market. 20% of respondents indicate they do not know.

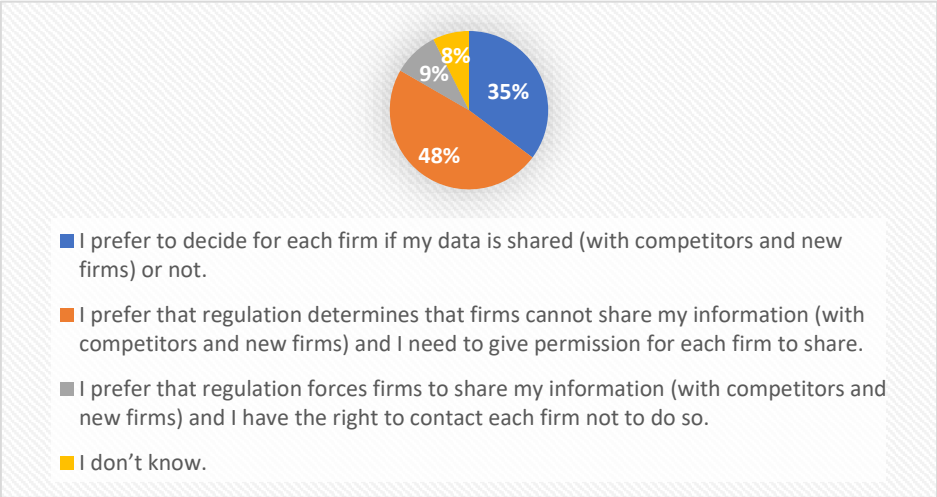
Graph 7: Conventional Decision



Note: 54 observations

Additionally, and according to graph 8, 35% of respondents reveal that they would prefer to decide for each company whether its data is shared with competitors and new companies or not. Furthermore, 48% state that they prefer that the regulations determine that companies cannot share their information and that they need to give permission for each company to share. Finally, 9% of respondents prefer that the regulation force companies to share their information and consumers then have the right to contact each company not to do so.

Graph 8: Preference in terms of the future regulation of data portability in your country



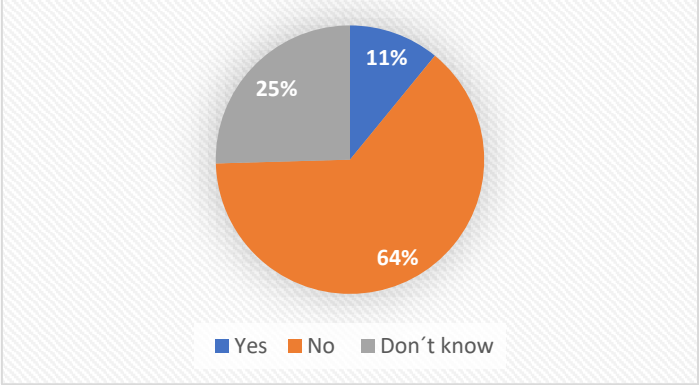
Note: 54 observations

b) Opt in decision

In this case I assume that the regulator has established that, by default, data is not shared between companies and it is up to each consumer to tell each company that they want the company to share their data with other companies. Respondents were asked whether in these circumstances, they would choose to request companies to share their data with other companies (by spending some time filling in a form, for example).

As shown in graph 9, 64% of respondents revealed that if data was not shared between companies they would not choose to ask companies to share it, as opposed to 11% who said they would ask companies to share their data with other companies, even if by default the data was not shared between them. In turn, 25% responded not knowing what to do.

Graph 9: Opt in decision



Note: 55 observations

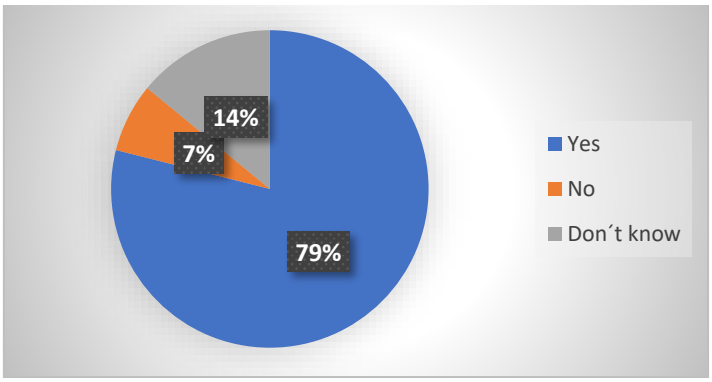
c) Opt out decision

Finally, in a scenario where the regulator mandates that data must be shared between companies by default, and it is up to each consumer to opt out if they do not want their data to be shared, respondents were asked whether they would take the time to fill out a form asking companies not to share their data with other companies.

The results obtained, show that 79% of respondents stated that they would choose to request companies not to share their data with other companies, while only 7% of respondents would not choose to ask companies not to share their data with others. It is also important to mention that 14% responded not knowing what to do.

I can observe the results in the graph 10.

Graph 10: Opt out decision



Note: 57 observations

6.8.2 Information impact

To assess the impact of information on individuals facing the opt-in decision, they were randomly assigned to one of four different situations in which the social and personal costs and benefits of data portability were presented.

In table 18 it is possible to see the decisions made by respondents before they were given any information about the personal or social benefits or costs of data portability.

Table 18: Decisions of respondents before information

Category	Before Personal benefits of data portability (n=15)	Before Personal disadvantages of data portability (n=14)	Before Social benefits of data portability (n=13)	Before Social costs of data portability (n=13)
I would choose data sharing	1 (6,67%)	4 (28,57%)	0 (0%)	1 (7,69%)
I would not choose data sharing	9 (60%)	7 (50%)	9 (69,23%)	10 (76,92%)
Don´t know	5 (33,33%)	3 (21,43%)	4 (30,77%)	2 (15,38%)

Table 19 shows the summary of the decisions made by respondents based on the type of information they are given.

Table 19: Summary of the impact of the information

Category	Personal benefits of data portability (n=15)	Personal disadvantages of data portability (n=14)	Social benefits of data portability (n=13)	Social costs of data portability (n=13)
I would choose data sharing	4 (27%) ↑	3 (22%) ↓	2 (15%) ↑	1 (8%) —
I would not choose data sharing	7 (46%) ↓	9 (64%) ↑	6 (46%) ↓	12 (92%) ↑
Don´t know	4 (27%) ↓	2 (14%) ↓	5 (39%) ↓	0 (0%) ↑

By analysing tables 18 and 19 it can be seen that after being given the personal and social benefits of data portability, the percentage of respondents who chose to share their data increased. The opposite was true when the personal and social disadvantages of data portability were shown, where in this situation there was an increase in respondents not wanting their data to be shared.

The results presented suggest it is also possible to verify that after being explained the personal benefits of data portability, 1 respondent who had previously answered not knowing and 2 who had previously answered not wanting to share their data, changed their answer stating that, after this information, they would choose to share their data.

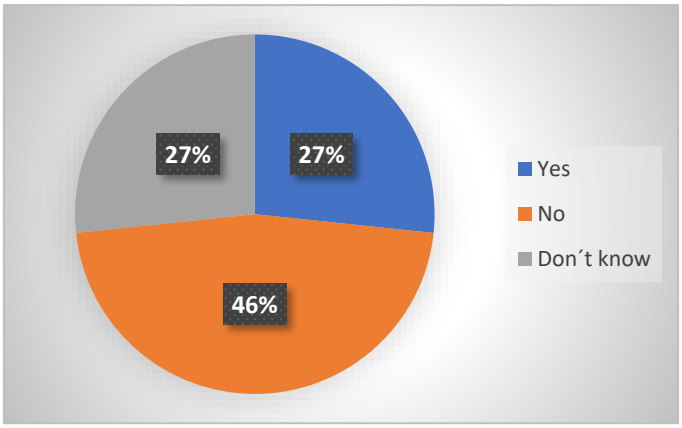
Regarding the personal disadvantages of data portability, 1 respondent who had previously chosen to share their data and 1 other who said they did not know, after being presented with these disadvantages changed their answer and now do not want their data to be shared.

When information about social benefits of data portability is provided, among the 6 respondents who did not want to share their data, 3 changed their answer. Finally, when confronted with the social costs of data portability, only 2 respondents changed their answer, going from not knowing to not wanting to share their data.

When information about personal benefits of data portability is presented, it can be seen that in the regulatory scenario where data is not shared between companies and it is up to the respondent to ask companies to share their data with others, 46% of respondents still choose not to request companies to share their data with other companies. In turn, 27% choose to ask companies to share their data and another 27% say they do not know.

I can observe the results in the graph 11.

Graph 11: Personal benefits of data portability



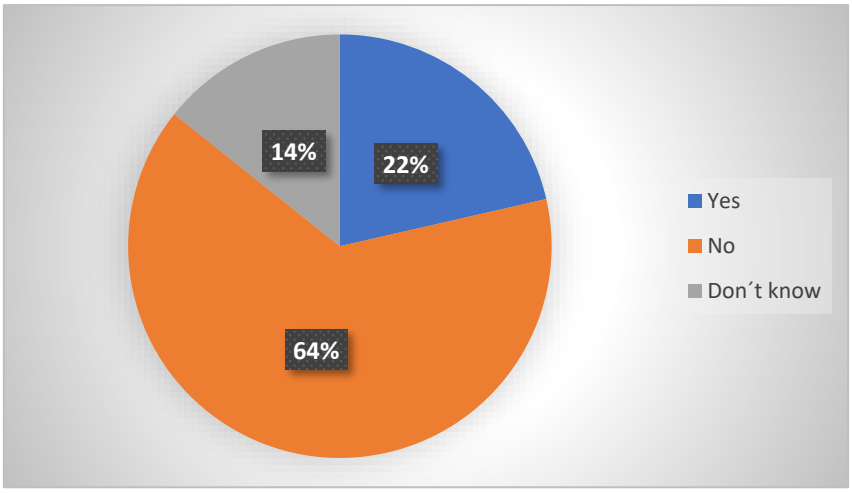
Note: 15 observations

Under the same regulatory framework, when faced with information about personal disadvantages of data portability the results are quite conclusive. Most respondents (64%) say that if their data is not shared

between companies, they would not ask companies to share it, as opposed to 22% of respondents who say they would ask companies to share their data with other companies.

I can observe the results in the graph 12.

Graph 12: Personal disadvantages of data portability



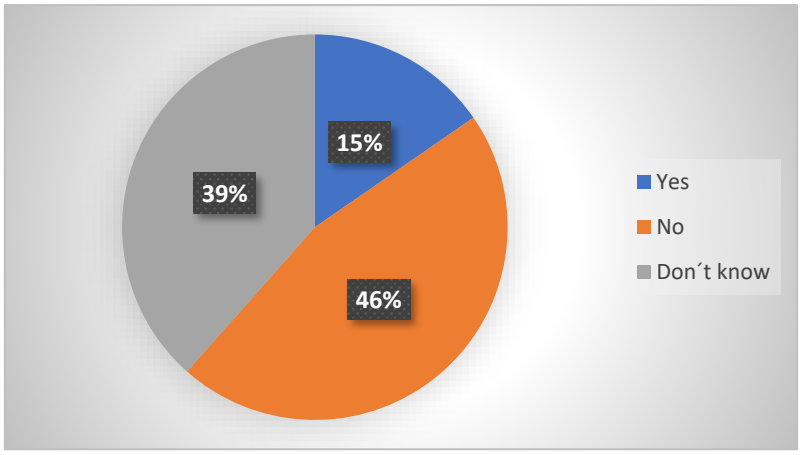
Note: 14 observations

When presented with the social benefits of data portability, 46% of respondents reveal that they would not ask companies to share their data with other companies. In turn, 15% of respondents say they would ask companies to share their data with others.

When respondents were presented with the social costs of data portability instead of the social benefits, virtually all (92%) say they would not ask companies to share their data. Contrary to the other situations, there was no respondent who answered "Don't know" when presented with the social costs of data portability. It is also important to mention that all answers were given based on the regulatory circumstance whereby data was not shared between companies and it was up to the individual to ask companies to share their data.

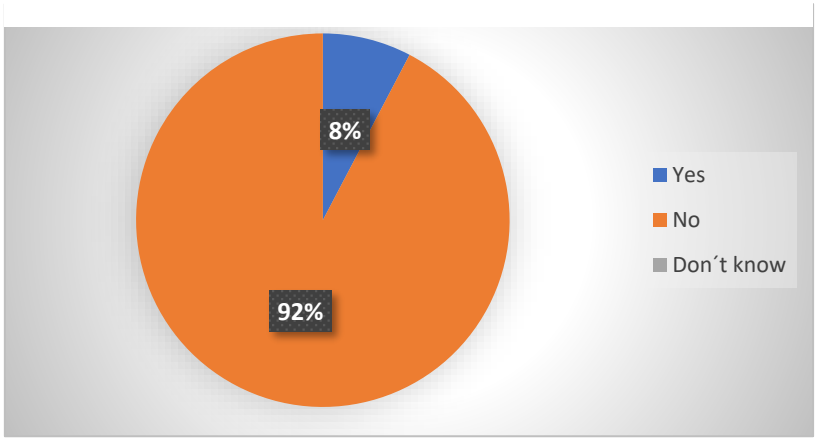
I can observe the results in the graph 13 and 14.

Graph 13: Social benefits of data portability



Note: 13 observations

Graph 14: Social costs of data portability



Note: 13 observations

6.9 Portability preferences

To finalize the analysis of the results, some regressions will be analysed, as well as some tests of independence in order to understand if there are relationships between some of the variables of the study and which variables influence the choice of consumers with regard to sharing or not their data.

6.9.1 Independence tests

In order to understand if there are relationships between some of the variables, independence tests were performed (table 20).

Table 20: Independence tests

Variables	Frequency of internet purchases	Sites registration	Advantages of big data for companies	Privacy concerns
Portability	Pearson chi2(1)=0,42 Pr= 0,516	Pearson chi2(1)=0,11 Pr=0,736	Pearson chi2(1)=0,51 Pr=0,477	Pearson chi2(3)=10,23 Pr=0,017***

Notes: levels of statistical significance
*** p<0.01, ** p<0.05, * p<0.1

After performing the tests of independence it was possible to conclude that there is no relationship between the variable "Portability" (choosing data portability rather than no data portability or not knowing how to answering) and the variables "Frequency of internet purchases" (use the Internet every day, several times a week, or several times a month for shopping instead of once a month or less or never), "Sites registration" (be registered at up to five sites or be registered at more than five sites) and "Advantages of big data for companies" (finding big data advantageous for businesses rather than advantageous for consumers).

Only privacy concerns and choice of portability are dependent: when testing the relation between the variable "Portability" and the variable "Privacy concerns" it is possible to verify that there is a relationship between both (Pr=0.017), i.e., the more concerned consumers are about their privacy the less willing they are to decide to share their data.

6.9.2 Regressions

Regressions analyses will now be performed and analysed in order to understand whether the portability option depends on the treatment or not. It is important to mention that a "treatment variable" was created

that assumes value 1 when it comes to the conventional decision, value 2 when it comes to the opt in decision, and value 3 when it comes to the opt out decision.

In the regressions performed, the dependent variable used (portability) was always the same and given its binary nature, a Logit model was used. In turn, different explanatory variables were used for the five models. The first model used variables pertaining to internet habits: "Internet purchases" and "Site registration" as explanatory variables. The second model additionally included perception variables: "Advantages of big data for companies" and "Privacy Concerns". The third model used "Internet purchases", "Site registration", "Sex", "Young people" and "Advantages of big data for companies", the fourth model used the treatment variable and, finally, the fifth model used all the explanatory variables mentioned above.

The results obtained can be seen in table 21.

Table 21: Logit regressions

Explanatory variables	**(1)** **Portability (1- data sharing, 0-no data sharing)**	**(2)** **Portability (1- data sharing, 0-no data sharing)**	**(3)** **Portability (1- data sharing, 0-no data sharing)**	**(4)** **Portability (1- data sharing, 0-no data sharing)**	**(5)** **Portability (1- data sharing, 0-no data sharing)**
Internet purchases (1- does shopping on the internet, 0- does not shopping on the internet)	-0,371 (0,487)	-0.474 (0.495)	-0,386 (0,491)		-0,342 (0,511)
Site registration (1- is registered on sites, 0- is not registered on sites)	0,247 (0,467)	0.169 (0.480)	0,258 (0,485)		0,223 (0,507)
Sex (1-male, 0 female)			-0,0292 (0,478)		-0,125 (0,510)
Young people (1- less than 25 years old, 0- 25 or older)			-0,527 (0,476)		-0,826 (0,521)
Advantages of big data for companies (1- big data is advantageous for companies, 0- big data isn´t		0.309 (0.524)	0,322 (0,522)		0,382 (0,544)

advantageous for companies					
Privacy concerns (1-strongly disagree to 5-strongly agree		-0,448* (0,254)			-0,584** (0,277)
2.treatment (opt in decision)				-0,951* (0,537)	-1,078* ((0,565)
3.treatment (opt out decision)				-1,435** (0,608)	-1,520** (0,633)
Constant	-1,799*** (0,331)	0,0241 (1,225)	-1,663*** (0,579)	-1,149*** (0,318)	1,817 (1,477)
Chi-square	0,7023	0,3963	0,7949	0,0289	0,0915
Observations	166	166	166	166	166

Notes: Standard errors in parentheses; levels of statistical significance
*** p<0.01, ** p<0.05, * p<0.1

By analysing this table it is possible to verify that in none of the models the socioeconomic variables and the variables "Internet purchases", "Site registration" and "Advantages of big data for companies" present statistical significance to explain the dependent variable.

In turn, it is possible to verify that the variable "Privacy concerns" explains significantly the dependent variable. The value of -0.448 shows that the greater the consumers' concern for privacy, the less likely they are to want to share their data.

Finally, the treatment variable is also shown to be significant. In model 4, the opt in decision treatment variable presents the value of -0.951 and the opt out decision treatment variable presents the value of -1.149, which shows that in these treatments people are less willing to share their data relative to the conventional decision. In model 5, these coefficients are still negative, which shows once again that in the opt in and opt out treatments people are less willing to share their data.

The fact that there are only these statistically significant variables may be due to the fact that the sample size is small and that this is still a recent theme whereby preferences are still not well formed towards the topic and as such results are noisy. In addition, there were some dropouts during the completion of the questionnaire. However, it is possible to conclude that in this sample there is a general distrust of data portability.

7. Conclusion

This dissertation sought to understand potential consumer behaviour regarding the right to data portability. It was also possible to understand the General Data Protection Regulation, as well as the impact that data and its portability can have on market competitiveness.

While businesses' access to consumer data can enhance consumer welfare, it becomes problematic when only a few of them have exclusive access to such data. This exclusivity grants them significant advantages, particularly in pricing and advertising strategies, enabling them to maintain their dominant market position, expand their market share, and potentially create barriers to entry for competitors.
Access to data also allows firms to price discriminate. A firm with access to consumers' data can better understand consumers' willingness to pay, thereby enabling it to price discriminate. The more information firms have from consumers, the greater their ability to price discriminate. The literature shows in general price discrimination by a monopoly firm improves profits at the expense of consumers surplus. Entry of new competitors is more difficult when they have no data for price discrimination and face a discriminant incumbent with exclusive access to data. In this situation, data sharing, for instance through data portability, could allow new competitor to get data and price discriminate. This would increase the likelihood of entry at the benefit of consumers.

This dissertation has tried to explore whether consumers are willing to share their data to the benefit of competition, through the realization of an empirical exploratory study. Data were collected from 166 individuals through a questionnaire survey, applied to a convenience sample. I found that most respondents use the internet to shop online, even if only once a month. A small percentage of respondents are not registered on any site, and similarly, only a small percentage do not shop online. While the majority of respondents have heard about the GDPR and understand the importance of data for businesses in digital markets, when it comes to specific and complicated topics such as data portability, most respondents have not heard of it or do not understand it at all. Respondents were concerned about sharing personal information online, with most of them worried about privacy. While acknowledging the need for personal data to access free digital services, they remained concerned about privacy when browsing. Most respondents would prohibit information sharing/selling. After getting informed about the GDPR, most respondents argued that due to the GDPR they feel safer and more comfortable sharing personal information with companies.

On the benefits of big data, half of respondents believe that companies benefit more than consumers from big data. In addition, most respondents say they are not aware whether their personal information

is used by companies only for commercial purposes and believe that companies' exclusive access to data is a barrier to entry for new companies, thus reducing competition.

Finally, it was possible to conclude that when respondents are given the option to choose whether or not they want data to be shared, they choose that their personal data from one company should not be shared with another competitor in the same market. In addition, the majority also prefer that regulations dictate that companies cannot share their information and that permission must be given for each company to share.

In a situation where, by default, data is not shared and the respondent will have to inform the company that they want their data to be shared, the questionnaire showed that respondents, faced with this circumstance, would choose not to ask companies to share their data with other companies. In turn, in a situation where, by default, data has to be shared between companies and the respondent will have to inform the company that they do not want their data to be shared, the questionnaire showed that respondents would, this time, choose to ask companies not to share their data with other companies. That said, it can be concluded that regardless of how the decision is presented, respondents always prefer their data not to be shared between companies. Therefore, I do not find a behavioural response in how the decision is presented exhibiting status quo bias.

As for the first research question: what are consumer perceptions and the potential choices towards data portability? I found that, in general, the respondents always show some fear of sharing their data, feeling safer knowing that their data will not be shared with other companies.

From the literature review carried out, it was possible to understand the relevance of the topic. However, in terms of empirical studies, consumers' perceptions are still little explored, particularly with regard to perceptions of data portability. Since this study focuses on these aspects, it can be seen as a small contribution helping to better understand consumers' behavior towards data portability.

The questionnaire also addressed experimentally the second research question (Does the presentation of the decision make a difference for the choice of data portability?) and third research question (What is the impact of information about the benefits and costs or risks of data openness on consumers` preferences for data portability?).

In the scenario where, by default, data is not shared and it is up to the individual to ask the company to share their data with others if they so wish, the experimental study showed an increase in the number of respondents choosing to share their data when they are informed of the personal and social benefits of data portability. In turn, when informed about the personal and social costs of data sharing the number

of individuals who choose not to share their data also increases. This shows that the type of information (benefits or costs) that is presented to respondents can have an impact on their response. However, as the numbers of responses in each treatment is small, the results need to be read with caution and taking this into consideration.

The limitations of this study are related to the small sample size and to the comprehensiveness in terms of the sample, as it was mostly confined to people living in Portugal and to the fact that most of the respondents were students. In addition, there were some dropouts during the completion of the questionnaire. However, as an exploratory study for a topic that is still not empirically explored in the literature, I used a convenience sample, which is appropriate at this stage of the research, however it limits the conclusions of the study.

In conclusion, given the growing prominence and discussions surrounding data portability, it is crucial for future studies to broaden their scope. For instance, conducting similar studies with representative samples in other European Union countries, which are also subject to the General Data Protection Regulation, would be significant. Such studies can provide insights into consumer perceptions and the effects of data portability in these countries.

8. References

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. Science, 347(6221), 509-514.

Aguirre, E., Roggeveen, A. L., Grewal, D., & Wetzels, M. (2016). The personalization-privacy paradox: implications for new media. Journal of Consumer Marketing, 33(2), 98–110.

Bell, Judith (2005). Doing your research project: a guide for the first-time researchers in education, health and social science. McGraw-Hill Education (UK).

Belleflamme, P., Lam, W. M. W., & Vergote, W. (2020). Competitive imperfect price discrimination and market power. Marketing Science, 39(5), 996-1015.

Bergemann, D., Brooks, B. and Morris, S. (2015). The limits of price discrimination. American Economic Review, 105(3), 921–957.

Bougette, P., Budzinski, O., & Marty, F. (2019). Exploitative abuse and abuse of economic dependence: what can we learn from an industrial organization approach?. Revue d'Economie Politique, 129(2), 261-286.

Bourreau, M., & De Streel, A. (2018). The regulation of personalised pricing in the digital era. https://dx.doi.org/10.2139/ssrn.3312158

Budzinski, O., Gaenssle, S., & Stöhr, A. (2020). The Draft for the 10th Amendment of German Competition Law: Towards a new Concept of Outstanding Relevance across Markets?.Ilmenau University of Technology, Institute of Economics. https://dx.doi.org/10.2139/ssrn.3629066

Campbell, M. C. (1999). Perceptions of price unfairness: antecedents and consequences. Journal of Marketing Research, 36(2), 187–199.

Campbell, M. C. (2007). "Says who?!" How the source of price information and affect influence perceived price (un)fairness. Journal of Marketing Research, 44(2), 261-271.

Chellappa, R. K., & Sin, R. G. (2005). Personalization versus privacy: An empirical examination of the online consumer's dilemma. Information Technology and Management, 6(2), 181-202.

Chen, Y., Narasimhan, C., & Zhang, Z. J. (2001). Individual marketing with imperfect targetability. Marketing Science, 20(1), 23-41.

Corts, K.S. (1998). Third-degree price discrimination in oligopoly: all-out competition and strategic commitment. RAND Journal of Economics, 306–323.

Cox, J. L. (2001). Can differential prices be fair? Journal of Product & Brand Management, 10(5), 264–275.

Dickson, P. R., & Kalapurakal, R. (1994). The use and perceived fairness of price-setting rules in the bulk electricity market. Journal of Economic Psychology, 15(3), 427–448.

E. Hargittai (2008). The Digital Reproduction of Inequality, in D. Grusky (Ed.), Social Stratification (pp.936-944). Westview Press.

Esteves, R. B. (2009). Price discrimination with partial information: does it pay off?. Economics Letters, 105(1), 28-31.

Esteves, R. B. (2022). Can personalized pricing be a winning strategy in oligopolistic markets with heterogeneous demand customers? Yes, it can. International Journal of Industrial Organization, 85, 102874.

Esteves, R. B., & Carballo-Cruz, F. (2023). Can data openness unlock competition when the incumbent has exclusive data access for personalized pricing?. https://repositorium.sdum.uminho.pt/handle/1822/75845

Esteves, R. B., & Shuai, J. (2022). Personalized pricing with a price sensitive demand. Economics Letters, 213, 110396.

Exposito-Rosso, S., Cao, F., Piquet, A., & Medjaoui, M. (2021). Research Report GDPR Data Portability: The Forgotten Right. Available at: https://cellar-c2.services.clever-cloud.com/alias-code-is-law-assets/static/report/gdpr_data_portability_the_forgotten_right_report_full.pdf

Feinberg, F. M., Krishna, A., & Zhang, Z. J. (2002). Do we care what others get? A behaviorist approach to targeted promotions. Journal of Marketing research, 39(3), 277-291.

Fudenberg, D., & Tirole, J. (2000). Customer poaching and brand switching. RAND Journal of Economics, 634-657.

Garbarino, E., & Maxwell, S. (2010). Consumer response to norm-breaking pricing events in e-commerce. Journal of Business Research, 63(9-10), 1066-1072.

Ghose, A., & Huang, K. W. (2009). Personalized pricing and quality customization. Journal of Economics & Management Strategy, 18(4), 1095-1135.

Goldfarb, A., & Tucker, C. (2011). Online display advertising: targeting and obtrusiveness. Marketing Science, 30(3), 389-404.

Gómez-Barroso, J. L. (2018). Experiments on personal information disclosure: past and future avenues. Telematics and Informatics, 35(5), 1473-1490.

Grossklags, J., & Acquisti, A. (2007). When 25 cents is too much: an experiment on willingness-to-sell and willingness-to-protect personal information. In WEIS.

Hann, I. H., Hui, K. L., Lee, T., & Png, I. (2002). Online information privacy: measuring the cost-benefit trade-off. ICIS 2002 proceedings, 1.

Hartzog, W. (2010). Website design as contract. American University Law Review, 60, 1635.

Haws, K. L., & Bearden, W. O. (2006). Dynamic pricing and consumer fairness perceptions. Journal of Consumer Research, 33(3), 304–311.

Hayat 1, M. A. (2007). Privacy and Islam: from the Quran to data protection in Pakistan. Information & Communications Technology Law, 16(2), 137-148.

Hoofnagle, C. J., & Urban, J. M. (2014). Alan Westin's privacy homo economicus. Wake Forest Law Review, 49, 261.

Huang, J.-H., Chang, C.-T., & Chen, C.-Y.-H. (2005). Perceived fairness of pricing on the internet. Journal of Economic Psychology, 26(3), 343–361.

Hufnagel, G., Schwaiger, M., & Weritz, L. (2022). Seeking the perfect price: consumer responses to personalized price discrimination in e-commerce. Journal of Business Research, 143, 346-365.

Ioannou, A., Tussyadiah, I., & Lu, Y. (2020). Privacy concerns and disclosure of biometric and behavioral data for travel. International Journal of Information Management, 54 (10), Article 102122.

Johnson, E. J., Bellman, S., & Lohse, G. L. (2002). Defaults, framing and privacy: Why opting in-opting out1. Marketing Letters, 13(1), 5-15.

Kahneman, D., Knetsch, J. L., & Thaler, R. (1986). Fairness as a constraint on profit seeking: entitlements in the market. American Economic Review, 76(4), 728–741.

Lii, Y.-S., & Sy, E. (2009). Internet differential pricing: effects on consumer price perception, emotions, and behavioral responses. Computers in Human Behavior, 25 (3), 770–777.

Marreiros, H., Tonin, M., Vlassopoulos, M., & Schraefel, M. C. (2017). "Now that you mention it": a survey experiment on information, inattention and online privacy. Journal of Economic Behavior & Organization, 140, 1-17.

Masatlioglu, Y., & Ok, E. A. (2005). Rational choice with status quo bias. Journal of Economic Theory, 121(1), 1-29.

Matsumura, T., & Matsushima, N. (2015). Should firms employ personalized pricing?. Journal of Economics & Management Strategy, 24(4), 887-903.

Maxwell, S. (2002). Rule-based price fairness and its effect on willingness to purchase. Journal of Economic Psychology, 23(2), 191–212.

Montes, R., Sand-Zantman, W., & Valletti, T. (2019). The value of personal information in online markets with endogenous privacy. Management Science, 65(3), 1342-1362.

Moore Jr, B. (1984). Privacy: studies in social and cultural history (3rd ed.). Routledge.

Morosan, C. (2018). Information disclosure to biometric e-gates: the roles of perceived security, benefits, and emotions. Journal of Travel Research, 57(5), 644–657.

Mothersbaugh, D. L., Foxx, W. K., Beatty, S. E., & Wang, S. (2012). Disclosure antecedents in an online service context: the role of sensitivity of information. Journal of Service Research, 15(1), 76–98.

Mullainathan, S., & Thaler, R. H. (2000). Behavioral economics. International Encyclopedia of the Social & Behavioral Sciences (2015), 437-442.

Murphy, R. F. (1964). Social distance and the veil 1. American Anthropologist, 66(6), 1257-1274.

Obermiller, C., Arnesen, D., & Cohen, M. (2012). Customized pricing: win-win or end run? Drake Management Review, 1(2), 12–28.

OECD (2018a). Personalized pricing in the digital era. Available at: https://one.oecd.org/document/DAF/COMP(2018)13/en/pdf

OECD (2018b). The regulation of personalised pricing in the digital era. Available at: https://one.oecd.org/document/DAF/COMP/WD(2018)150/en/pdf

OECD (2020). Abuse of dominance in digital markets. Available at: http://www.oecd.org/daf/competition/abuse-of-dominance-in-digital-markets-2020.pdf

OECD (2021a). Data portability, interoperability and competition. Available at: https://one.oecd.org/document/DAF/COMP/WD(2021)35/en/pdf

OECD (2021b). Data portability, interoperability and digital platform competition. Available at: https://www.oecd.org/daf/competition/data-portability-interoperability-and-digital-platform-competition-2021.pdf

OECD (2022), The Evolving Concept of Market Power in the Digital Economy, OECD Competition Policy Roundtable Background Note, www.oecd.org/daf/competition/the-evolving-concept-ofmarket-power-in-the-digital-economy-2022.pdf

Ofcom (2020). Personalised pricing for communications: making data work for consumers. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0033/199248/personalised-pricing-discussion.pdf

Okazaki, S., Eisend, M., Plangger, K., de Ruyter, K., & Grewal, D. (2020). Understanding the strategic consequences of customer privacy concerns: a meta-analytic review. Journal of Retailing, 96(4), 458–473.

Pfarr, N., & Gregory, J. (2010). Cognitive biases and design research: using insights from behavioral economics and cognitive psychology to re-evaluate design research methods, in Durling, D., Bousbaci, R., Chen, L, Gauthier, P., Poldma, T., Roworth-Stokes, S. and Stolterman, E (eds.), Design and Complexity - DRS International Conference 2010, 7-9 July, Montreal, Canada. https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/95

Pigou, A. (1920), The Economics of Welfare. McMillan & Co (3rd edition 1928).

Pizzi, G., Vannucci, V., Shukla, Y., & Aiello, G. (2022). Privacy concerns and justice perceptions with the disclosure of biometric versus behavioral data for personalized pricing tell me who you are, I'll tell you how much you pay. Consumers' fairness and privacy perceptions with personalized pricing. Journal of Business Research, 148, 420-432.

Racherla, P., Babb, J. S., & Keith, M. J. (2011). Pay-what-you-want pricing for mobile applications: the effect of privacy assurances and social information. In Conference for Information Systems Applied Research Proceedings (Vol. 4, No. 1833, pp. 1-13).

Rosencrance, L. (2000). Customers balk at variable DVD pricing: Amazon.com claims It was part of a test. https://www.computerworld.com/article/2597065/customers-balk-at–variable-dvd-pricing.html

Sahay, A. (2007). How dynamic pricing leads to higher profits. MIT Sloan Management Review, 48(4), 53.

Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. Journal of Risk and Uncertainty, 1(1), 7-59.

Schudy, S., & Utikal, V. (2017). 'You must not know about me'—On the willingness to share personal data. Journal of Economic Behavior & Organization, 141, 1-13.

Shaffer, G., & Zhang, Z. J. (2002). Competitive one-to-one promotions. Management Science, 48(9), 1143-1160.

Silvestre, H. C., & Araújo, J. F. (2012). Metodologia para a investigação social. Lisboa: Escolar Editora.

Singer, E., Hippler, H. J., & Schwarz, N. (1992). Confidentiality assurances in surveys: reassurance or threat?. International Journal of Public Opinion Research, 4(3), 256-268.

Slovic, P. (1995). The construction of preference. American Psychologist, 50(5), 364.

Smith, H. J., Dinev, T., & Xu, H. (2011). Information privacy research: an interdisciplinary review. MIS Quarterly, 35(4), 989–1015.

Smith, H. J., Milberg, S. J., & Burke, S. J. (1996). Information privacy: measuring individuals' concerns about organizational practices. MIS quarterly, 167-196.

Spiekermann, S., Korunovska, J., & Bauer, C. (2012). Psychology of ownership and asset defense: why people value their personal information beyond privacy. https://dx.doi.org/10.2139/ssrn.2148886

Steinfeld, N. (2015). Trading with privacy: The price of personal information. Online Information Review, 39(7), 923-938.

Streitfeld, D. (2000). On the web price tags blur: what you pay could depend on who you are. The Washington Post, 27.

Thaler, R. H., & Benartzi, S. (2004). Save more tomorrowTM: using behavioral economics to increase employee saving. Journal of Political Economy, 112(S1), S164-S187.

Thisse, J. F., & Vives, X. (1988). On the strategic choice of spatial price policy. American Economic Review, 78(1), 122-137.

Varian, H. R. (1989). Price discrimination. In R.Schmalensee and R. Willing (eds.) Handbook of Industrial Organization, 1, 597-654.

Wagner, A., Wessels, N., Buxmann, P., & Krasnova, H. (2018). Putting a price tag on personal information-A literature review. In Proceedings of the 51st Hawaii International Conference on System Sciences. Available at: http://hdl.handle.net/10125/50362

Xia, L., Monroe, K. B., & Cox, J. L. (2004). The price is unfair! A conceptual framework of price fairness perceptions. Journal of Marketing, 68(4), 1–15.