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Acceptance of the usage of genetic data for marketing purposes

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Abstract

Genetic marketing is a burgeoning topic of research that forces the field of marketing to contend with new paradigms, both in terms of the potential it brings to theory and practice, and the concerns it raises regarding personal data privacy. As companies are becoming growingly interested in employing these kinds of practices, they may also face multiple challenges due to the novelty of the subject. One of these obstacles relates to how the implementation of genetic marketing impacts the attitudes of consumers towards organizations that use these techniques.

This study seeks to fill the research gap related to the perception of the implementation of genetic marketing practices by exploring consumers' acceptance of the usage of genetic data for marketing purposes, aiding companies in understanding if they should implement genetic marketing and how they may approach it.

This research conducts a survey from a sample of 310 Portuguese consumers to gather data on the issue and utilizes partial least squares structural equation modelling to empirically analyze the answers.

The results show that perceived benefits and perceived level of control of information play a significant and positive role in improving levels of acceptance. Furthermore, it indicates that institutional reputation contributes positively to the benefits consumers perceive.

This study concludes that creating benefits for the disclosure of information, establishing a positive reputation for the organization, and building systems that empower consumers in terms of control over their genetic data help them accept genetic marketing practices.

Keywords: genetic data; genetic marketing; personal data privacy; privacy calculus; acceptance.

JEL Classification System: Marketing (M31); Other (M39)

Resumo

Marketing genético é um recente tópico de investigação que força o campo de marketing a enfrentar novos paradigmas, quer em termos do potencial que acrescenta à teoria e prática, quer a nível de preocupações com privacidade de dados que levanta. Enquanto as empresas se tornam cada vez mais interessadas neste tipo de práticas, enfrentam também múltiplos desafios devido a quão recente é o tema. Um destes obstáculos relaciona-se com como a implementação de marketing genético impacta as atitudes dos consumidores relativamente a organizações que usem estas técnicas.

Este estudo preenche a falha na investigação relacionada com a perceção da implementação de práticas de marketing genético ao explorar a aceitação dos consumidores do uso e monetização dos seus dados genéticos para propósitos de marketing, auxiliando empresas a compreender se devem implementar marketing genético e como o fazer.

Esta pesquisa realiza um inquérito junto de consumidores portugueses, através de uma amostra de 310 participantes, para reunir dados sobre a questão e utiliza modelação de equações estruturais com *partial least squares* para analisar empiricamente as respostas.

Os resultados mostram que benefícios percebidos e nível de controlo de informação percebido têm um papel positivo e importante na melhoria dos níveis de aceitação. Adicionalmente, indicam que reputação institucional contribui positivamente para os benefícios percebidos pelos consumidores.

Este estudo conclui que criar benefícios na divulgação de dados, estabelecer uma reputação positiva para a organização, e criar sistemas que empoderem consumidores em termos de controlo sobre os seus dados genéticos ajudam-nos a aceitar práticas de marketing genético.

Palavras-chave: dados genéticos; marketing genético; privacidade de dados pessoais; cálculo de privacidade; aceitação.

JEL Sistema de Classificação: Marketing (M31); Outro (M39)

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1. Introduction

The rise of big data has brought with it many opportunities, but also challenges and ethical complications. This, in turn, has given life to a robust literature on personal data collection and privacy, which has become necessary in nearly all fields of knowledge. From social media to healthcare, politics to technology, researchers have been busy investigating how this phenomenon has impacted multiple industries, how it may evolve and be used in the future, and the ramifications it holds for ethics and society at large. But the nature of this issue continues to change and complicate, as novel technologies and emerging trends add new layers to the subject (Yun et al., 2019).

Such is the case with the appearance of genetic data collection, a type of data that pertains to datasets containing genomic information of large groups of individuals. This information is being used for a variety of purposes and without significant regulation, from the development of health-related products that target specific genetic information to curated travel and entertainment experiences based on a person's ancestry, raising questions about the lack of control individuals have over their privacy (Ahmed & Shabani, 2019).

One of the applications of this type of data is in the field of marketing, where it has great potential for things such as targeting, segmentation and positioning, but also where these issues become more pronounced, although little research has been done beyond identifying which parts of the marketing process may be impacted (Daviet et al., 2021). Therefore, when it comes to marketing theory, there remains much to be explored in terms of studying how genetic marketing may take shape as a field of study, identifying its core tenets and main drivers, structuring it in models and frameworks, building a comprehensive body of research, and understanding how it will impact existing paradigms. In terms of marketing practice, beyond targeting, segmentation and positioning, there is potential to study its application in other areas, such as product development, market research and brand management. Additionally, and the point of focus of the present study, there is scarce literature to help understand the levels of acceptance consumers have on the usage of their genetic data for marketing purposes, which fits into the first stage of research necessary to build a comprehensive body of knowledge on a subject.

This significant research gap related to the general understanding of how consumers perceive genetic marketing practices is the justification for what this study proposes to do. To bring insight from already existing literature on personal data privacy concerns in other fields and translate it into the context of genetic data and marketing. To do this, inspiration will be drawn from conceptual models in other research areas preoccupied with understanding the

factors that influence concerns over personal data privacy. These key factors will be subsequently borrowed to construct a new framework. The goal is to find which variables are relevant to comprehend consumers' acceptance of the usage of their genetic data for marketing purposes and construct a new conceptual model based on them, testing its validity with a survey.

Being such a recent topic with scant literature on it, there is still great potential for new discoveries and gaps in the literature to be filled, which the present study intends to do by gaining an understanding of the factors that influence consumers' acceptance of the usage of their genetic data for marketing purposes. Similar research on psychological dimensions of perception and intention has been conducted for years on other kinds of personal data, such as social media, internet behavior, and medical devices (Trepte et al., 2017; Gerber et al., 2018; Li et al., 2016; Zhang et al., 2018; Bansal et al., 2010; Jayawardhena et al., 2009; Ajzen, 1991; Gao et al., 2012). Pulling from that already existing body of knowledge and the fact that genetic data is considered a type of personal data, it is possible to build a framework inspired by that research that is useful to understand this new paradigm. To successfully reach those conclusions, the following question must be addressed and answered in the present study:

What factors influence consumer's acceptance of the usage of their genetic data for marketing purposes?

This recency and absence of literature are both a challenge and a motivation. The desire to delve into this topic came from a variety of sources, both internal and external, such as the above-mentioned novelty of the subject, its potential for marketing practice and a personal fascination for the deeper biological factors that influence human behavior. To pioneer and push the frontier of knowledge on such a recent topic is a rare and enticing opportunity. However, to fulfill this desire and to produce the best research possible, some concrete objectives must be met.

1. Identify, understand, and enumerate the factors that influence the consumers' acceptance of the usage of their genetic data for marketing purposes.
2. Use the findings on consumers' acceptance to clarify the potential risks and opportunities of investing in genetic marketing.
3. Ensure that this research provides insight that is actionable and useful for companies and other researchers.
4. Expand upon the scarce literature in this new field with findings that are key to its future development.

Finally, in terms of structure, the present study is divided into six sections. The first one introduces the research topic, identifies the main research questions and objectives, as well as the structure, theme, and motivation behind the dissertation. The second section concerns itself with the literature review and the extraction of the research hypothesis from it. In the third section the research model is discussed and presented with a clear visual representation. The fourth one explains the methodology of the study, specifically in terms of the scales and measures used, as well as the sample and kind of data collection used. The fifth section covers the analysis of the results, exploring both the outer and inner model, discussing them and the validity of the hypothesis. The sixth and final section presents the main conclusions of the study, the theoretical and managerial implications, and limitations of the study and ideas for future research.

2. Literature Review and conceptual model

2.1 Genetic Data

Genetic data, according to the General Data Protection Regulation (GDPR) codified by the European Union and adopted by the present research, is defined as “personal data relating to the inherited or acquired genetic characteristics of a natural person which result from the analysis of a biological sample from the natural person in question, in particular chromosomal, deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) analysis, or from the analysis of another element enabling equivalent information to be obtained.” (European Parliament, 2016).

The collection of the genetic data defined above has been the next great subject under personal data privacy, pushing the boundaries of literature in several related topics, from genetics to marketing, which will be discussed further ahead in this study. The potential uses and applications of this kind of data are far-reaching, and therefore, potentially dangerous in many ways, particularly in terms of breaching personal data privacy (Molteni, 2018).

One of the ways this kind of data is obtained from the population and then used for the many applications it has is direct-to-consumer (DTC) genetic testing, in which consumers are tested by private organizations which then analyze the data to provide them with insight on health, personal ancestry and more (Horton et al., 2019). Of course, there are other ways this type of data is collected, such as through physicians to diagnose health problems, but it was with DTC genetic testing that private organizations began collecting data which can be used for a variety of business purposes and then sold and resold, giving rise to concerns over personal data privacy akin to those discussed in social media, mobile devices and other areas of healthcare (Nill & Laczniak, 2020).

This information can also later be analyzed by third-party genetic interpretation services, which provide physicians and DTC genetic testing companies with interpretation for the raw data they have collected, posing questions over the handling of the data since the level of regulation, at least in the United States, is quite limited (Guerrini et al., 2019). As it stands, there is little to be gained by consumers by sharing their genetic data, beyond learning more about their ancestry and potential health issues, but this could change with the introduction of ‘DNA data marketplaces’, where individuals could sell this information to interested parties, gaining back control over their data, and benefiting from it (Ahmed & Shabani, 2019).

2.2 Usage of genetic data

The applications of genetic data for research and business are wide-ranging, but of particular interest for this study are its usages in better understanding human behavior, which in turn lead

to the monetization of said data for a multitude of purposes. The usefulness of this information is growing steadily, as are the methods for extracting and understanding the links genes have to behavior, with science already having discovered the heritability and genetic influence of things such as personality traits, risk of disease, longevity, and even intelligence, and these insights can, in turn, be used to influence insurance prices and to create genetically informed consumer profiles (Flint et al., 2020; Davies et al., 2011).

Research into the subject of genetics has also produced a variety of other insights, which can be used to further exemplify the far-reaching applications of this field of science and the subsequent monetization of the knowledge produced. For example, Cronqvist & Siegel (2014) found that investment biases are heritable, innate and a result of evolution, which manifests in hereditary patterns of portfolio diversification and trading. Similar research has also found that behaviors such as blood donation, voter turnout, and certain aspects of consumer decision making show evidence of heritability (Pedersen et al., 2015; Loewen & Dawes, 2012; Simonson & Sela, 2011). These insights may be used for a variety of subsequent research and business purposes, such as political campaigns, financial products, as justification for regulation and for advanced marketing tactics, which will be elaborated upon in the next section.

Furthermore, research into genetics is also powerful for the social sciences, allowing not only to better understand individual human behavior, but how these individually hereditary genes cascade and combine into general societal behavior, which is of great usefulness and potential for sociologists, economists, and other social scientists (Mills & Tropf, 2020; Harden & Koellinger, 2020). The applications of these discoveries are substantial but give rise once more to personal data privacy issues since they constitute large datasets of third-party information which can be used to dubious lengths by companies and governments. It does not get more personal than genetic data.

To reach these insights into individual and general societal human behavior through genetics there are a wide variety of studies and methodologies that are used. Twin studies, genome-wide association studies, polygenic score analyses, and several other emerging statistical and genetic analysis tools are all commonplace and offer readily applicable conclusions for stakeholders (Harden, 2021).

2.3 Genetic Marketing

As mentioned in the previous section, genetic data has great potential when it comes to its application in the field of marketing. There already exists a vast amount of literature on genetics and heritability that can be used by marketers in every stage of the marketing process, which

consists of diagnosis, strategy, and then tactics (Ritson, 2021). In this regard, this kind of information is neither revolutionary nor a replacement for a proper diagnosis with other types of data, but a valuable addition that further informs marketers on the characteristics and behavior of consumers. Furthermore, this expansion in available information about individuals also allows marketers to find novel ways to approach classic marketing processes such as targeting, segmentation, and positioning (Daviet et al., 2021). This burgeoning field of knowledge focused on the usage of genetic data for marketing purposes is therefore named genetic marketing.

The applications of biological research and knowledge is not a novelty in business studies (Nofal et al., 2017). But it is perhaps in the field of marketing that biology's subject of genetics can have the most potential in terms of practical application in real-life business situations. This potential may, however, be delayed by debate within marketing academia and be met with skepticism, much like the introduction of evolutionary psychology (EP) was and still is, despite its methodological validity (Otterbring, 2021). However, much like EP, the value of genetics is that it allows marketers to understand not only the ultimate explanations to human behavior (those concerned with the 'what' and 'how' of it) but delve into the proximate explanations (those concerned with the 'why') (Saad, 2017). Without this deeper level of insight, marketers' understanding of consumer behavior will never be complete, therefore damaging the effectiveness of their marketing efforts (Saad, 2017).

The new field of genetic marketing has also become reality in part due to the emergence of direct-to-consumer (DTC) genetic testing, which, as mentioned in a previous section, has created an industry where consumers willingly give away their genetic data to companies such as 23andMe, AncestryDNA and MyHeritage. This information can then be sold and resold to different companies with varied purposes, creating ethical challenges in terms of the privacy of this data. However, since genetic marketing is such a recent subject, there is no literature studying privacy concerns and consumer acceptance for genetic data as there is for other kinds of personal information (Daviet et al., 2021).

2.4 Personal data collection and privacy

The concept and definition of personal data are still subject to discussion, with varying approaches in academia and in the law, which then depend on the specific context of each country and region (Gellert, 2021). Furthermore, both the academic perspective and the legal

paradigm have changed and will keep doing so, as the nature, applications, and methods to extract personal data transform with time and technology (Yun et al., 2019).

To further complicate the understanding of the definition of personal data, the advent of big data analytics has made it so that one's personal information and behavior can become entangled with that of entire groups that reveal one's data, and vice-versa (Mittelstadt, 2017). Additionally, the problem of the classification of personal data as groups is that even when anonymity is respected, there are ways to reconstruct individual information that was supposed to have been erased from the data (Rocher, 2019). With developments of technologies such as AI, it only becomes easier and likelier to find individuals' personal information from group data that had been supposedly secured and de-identified. In fact, this reality has given rise to new ways of thinking about privacy, with authors suggesting that it should shift from definitions of privacy (characteristics of privacy) to models of privacy (how privacy works), with research proposing a new model of datafication that encompasses the phenomenon of the usage of predictive analytics on already gathered data. (Mai, 2016).

If people's privacy can be breached without even directly providing personal data, and if anything they do constitutes information that can be used to profile them as individuals or as parts of data groups, the path forward may be to recognize that everything one does can be constituted as personal data, therefore is protected under the law (Purtova, 2018).

Considering this context, it's difficult to pinpoint a concrete definition for personal data in the literature that is not subject to debate and rapid change. For that reason, as it stands, the best frameworks to understand and define the concept of personal data privacy and its collection are the legal paradigms, as these are the ones being enforced by countries and companies and to which individuals routinely consent. In this sense, the logical choice for the present study is to accept one of these legally active frameworks as the definition of personal data, while adapting it to the specific context of the research and admitting its shortcomings. For that purpose, the adopted framework is the one proposed and enforced by the European Union, the General Data Protection Regulation (GDPR).

2.4.1 Types of Personal Data

Understanding personal data implicates understanding the types of data that can be collected about groups or individuals, and in this regard, there can be identified three types of personal data: first-party data, which is information obtained firsthand by the organization from their audience for their use; second-party data, which is about their audience and obtained secondhand from another partner entity; and third-party data, which is obtained through external sources about any group of individuals or audience (Bernazzanni, 2021).

Most of the literature deals or relates to the usage and monetization of third-party data, which can be sold and resold and used in a multitude of ways, such as advertizing and targeting, but also many of which individuals may not have been aware of and consented to without proper knowledge (Sponder & Khan, 2017). This type of data has fueled a great part of the rich literature on personal data privacy, but also a lot of the issues that surround the topic. It also justifies the existence of the concepts presented in the next sections.

2.4.2 Privacy Calculus

Serenko (2014) defined Privacy Calculus as a theory that “proposes that an individual’s intention to disclose personal information is based on a risk-benefit analysis. According to privacy calculus theory, individuals compare perceived risks and anticipated benefits.” (p. 1). This theory has become fundamental when dealing with personal data and still provides the main perspective on which the privacy concerns of individuals are evaluated on many fields and subjects, from healthcare to social media, to websites of varied natures, such as health, news, and commercial ones (Bol et al., 2018).

Although still essential in the context of personal data literature, developments have been made and proposed that expand upon the factors that influence the privacy calculus risk-benefit analysis, such as the importance of culture on both perception and relevance given to risks and benefits (Trepte et al., 2017). According to the authors, the degree of individualism, collectivist thinking, uncertainty avoidance, and importance of social gratifications are all cultural factors that impact the risk-benefit analysis. Other factors, such as concerns and attitude towards privacy, risk perceived, and behavioral intention are also evidenced to impact the outcome of the privacy calculus (Gerber et al., 2018).

In the personal data privacy literature, the privacy calculus is used to evaluate a variety of behavioral reactions and attitudes in individuals, from the adoption of healthcare wearable devices to information-sensitive mobile app adoption (Pentina et al., 2016; Li et al., 2016; Smith et al., 2011). These attitudes are closely related to acceptance, a variable of interest for this research. In these studies, perceived privacy risk and perceived benefits, key elements of the privacy calculus, have a negative and positive influence on adoption, respectively. Thus, by building upon these findings, the following hypotheses are proposed for the present research:

H1: Acceptance of the usage of genetic data for marketing purposes is negatively related to perceived privacy risk

H2: Acceptance of the usage of genetic data for marketing purposes is positively related to perceived benefits

2.4.3 Privacy Paradox

Along with privacy calculus, the privacy paradox has become a powerful and consensual framework in topics pertaining to personal data, and it describes the dichotomy between the intention individuals have to protect their privacy and their actual behavior which breaches their privacy (Barth & de Jong, 2017). In other words, people claim to care about the disclosure of their personal information, but do not back these claims with actions that actually preserve their privacy (Bongiovanni et al., 2022). This paradox can be witnessed in the disclosure of personal information throughout the internet, where individuals' behavior contradicts their concerns over their privacy after sharing their data in places such as social networking sites (Taddicken, 2013). However, despite being a consensual approach that is commonplace in the literature, there are other interpretations suggested to understand the concept of privacy paradox, which Kokolakis (2017) states to be derived from "social theory, psychology, behavioral economics and, in one case, from quantum theory." Additionally, other researchers also propose that there are fundamental issues in privacy paradox literature that put into question its validity and existence, claiming that there are methodological flaws in the literature that do not account for the causal nature of the phenomenon, suggesting that more research on causal relations is necessary to better comprehend the privacy paradox (Dienlin et al., 2021).

Research into explaining the reasons for the existence of the privacy paradox and the reasons which lead people to breach their concerns has found several key points that expand upon the understanding of the concept. One key point is that the paradox is constituted by a temporally discounted balance between concerns and rewards, where the psychologically near activities that involve a privacy breach have more weight in them than psychologically distant concerns (Hallam & Zanella, 2016). Furthermore, as additional investigation done about mobile-app adoption suggests, these aforementioned concerns do not influence the adoption or use of apps that require sensitive personal data (Pentina et al., 2016). The authors further elaborate on the positive influence that personality traits such as agreeableness and extraversion have on the benefits of using those apps, which affects the privacy calculus and further justifies the breach inherent to the privacy paradox. Additional research on the nature of the privacy paradox and the reasons for its existence point to the usefulness of dual process theory in explaining the phenomenon, with studies revealing that it occurs for both conscious and unconscious reasons, meaning that individuals are not always aware of factors influencing the paradox (Zahra et al., 2017).

The plentiful reasons for the existence of the privacy paradox in personal data privacy literature point to the ease with which breaches can happen and the difficulty in reducing it. The

reality is, as research on the topic reveals, that individual action is insufficient in achieving the goal of either desired or desirable levels of privacy (Acquisti et al., 2020). The only remaining solution, the authors suggest, is concerted policy intervention, which is hampered by opposing interests.

2.5 Usage and monetization of personal data

Personal data has many uses and potential applications, making its monetization inevitable and highly sought after, generating markets where this information is sold and resold, giving rise to the economics of privacy (Acquisti et al., 2016). The advent of this datafication phenomenon, on the other hand, is in itself justification for shifts in economic paradigms and policy (Einav & Levin, 2013). At the same time, it can be hard to measure the value of this kind of ‘big data’ information, due to its sensitive nature and the fact that it can have a key impact on real-time decision making (Pantelis & Aija, 2013).

These markets where personal data is traded are valued in the billions, but at the same time present inefficiencies and limitations, especially in terms of presenting some value to the individuals who are seeing their information sold and resold to great profit, and one possible path to remedy this is through the creation of two-sided markets (Baitaneh et al., 2020). In these markets, individuals knowingly and freely control and monetize their data to see a return on the profit made off their personal information.

The contexts that allow for the usage and subsequent monetization of personal data are wide-ranging and present in nearly all fields of knowledge, from healthcare to social media, tech devices, education, government, and many more (Liang et al., 2018). It is also most notably known for its applications in the field of marketing and the practice of advertising, which will be developed in the next section.

In large part, the concerns surrounding the usage of personal data stem precisely from this monetization and trading between countless parties of varying backgrounds, generating an industry that is valued in the billions (Statista, 2021). But there are possible paths through which individuals may regain control over their privacy and even be able to commercialize it, such as through the creation of two-sided market-based platforms where people can monetize their personal data, as by the research of Baitaneh et al. (2020).

2.6 Usage of personal data for marketing purposes

The questions surrounding personal data are of particular importance to the marketing field, from its monetization to the theory and practice of its privacy (Martin & Murphy, 2017). In

terms of the specific usage of the personal data and how it is monetized, there is a myriad of applications and ways information about the consumers can be leveraged for marketing and advertising purposes, gathered from what they did on social media, what they searched on Google, their browser history and much more (Matsakis, 2019). And this is only related to digital data, but there are all kinds of information beyond these that can be gathered about consumers and then used to sell them something or tailor marketing efforts to them, from their in-store behavior, the places they go to, and what they do there.

There are also studies done on willing and aware individuals which may not breach their privacy but shed light on human behavior that raises questions over privacy concerns of society at large, such as research done on the appeal and preference of movies based on reactions to trailers and the influence of personality on impulsive buying behaviors (Boksem & Smidts, 2015; Gangai & Agrawal, 2016; Pelau et al., 2018). Although the privacy of the subjects may be respected in the terms they agreed to, the research may inform businesses on how to better influence consumers based on those findings which involve information also sensitive to other individuals.

On a surface level, the marketing and advertising industries can, for example, use personal data extracted from internet behavior to target and re-target ads, design campaigns tailored to specific groups of people, launch new products adapted to trends and people's preferences, and even tailor the whole experience individuals have on the web so as to maximize the chance of them spending money (Stephens-Davidowitz, 2017). Although not all categories of personal information have the same importance for both individuals and the marketplace, the nature of big data makes it so that all details about people come entangled together, even if when using or buying the data they can only access a part of it (Staiano et al., 2014).

More insidiously, this data can be used to run political campaigns, adapting the messaging to fit into the profiles of voters and target them in ways that convince, and even manipulate them into voting into certain candidates, as was reported after the 2016 presidential election in the United States of America (Todd et al., 2017).

2.7 Factors that influence consumer acceptance of the usage of their personal data

Explaining the factors that influence consumer acceptance of the usage of their personal data is key to understanding the literature on personal data privacy, and the subject itself. Furthermore, it is also of paramount importance in terms of managerial and business implications, as this attitude must orient the behavior of companies depending on the factors and also what challenges and opportunities exist for them related to the topic.

Key to this understanding is the literature on privacy calculus and the privacy paradox, already mentioned in previous sections. In privacy calculus literature it's witnessed the importance of culture, in terms of individualism, collectivism, uncertainty avoidance, and social gratification in the risk-benefit analysis (Trepte et al., 2017; Gerber et al., 2018). In privacy paradox literature is seen the importance of a temporally discounted balance between concerns and rewards and of personality traits in understanding the paradox (Hallam & Zanella, 2016; Pentina et al., 2016). These insights are not only important in understanding their respective literatures but also the attitude consumers have towards the usage of their personal data, regardless of its application, which is then useful in understanding acceptance if the data is used for marketing purposes.

To further explain these factors, it's necessary to look deeper into theory. In terms of theoretical research contributions, Zeng et al. (2021) elaborated on the opportunity presented by personalization of data, which seemed to positively drive acts of self-disclosure and their intensity, if accompanied by declarations of privacy assurance. Li et al. (2016) demonstrated that the privacy calculus, and therefore behavioral attitudes, are influenced by several elements such as information sensitivity, personal innovativeness, legislative protection, perceived prestige, perceived informativeness and functional congruence, in the context of the adoption of healthcare wearable devices. The authors also identified that, within the privacy calculus, perceived benefits impact perceived privacy risk negatively. Also related to healthcare, it was found that individuals' health concerns and their perceived vulnerability and severity influence positively their privacy concerns, and negatively by their perception of the control they have over their privacy (self-efficacy) and the effectiveness of privacy protection mechanisms (response efficacy) (Zhang et al., 2018). Furthermore, it was also shown that disclosure intention of personal data is influenced by trust, sensitivity of the information, and the level of privacy concern (Bansal et al., 2010). Additionally, this factor of trust is in turn influenced by antecedents such as risk beliefs, health status, personality traits, and more.

Trust was also seen to take a pivotal role in willingness to participate in mobile marketing, specifically institutional trust (Jayawardhena et al., 2009). More broadly, it was also found that business policies perceived as robust and regulation on personal data privacy reduce the level of concern related to it, while an absence of these factors prompts consumers to try to regain power in this regard through means such as falsifying their personal data and using external technologies that boost their privacy (Wirtz et al., 2007). Indeed, control over personal information is a common and significant factor in privacy literature, going back to the theory of planned behavior where perceived behavior control is shown to have an important role over

intentions and actual behavior (Ajzen, 1991). This leads to another relevant factor which is risk avoidance, a factor that serves as a barrier to acceptance, being shown to negatively influence youth consumers' acceptance of mobile marketing in China (Gao et al., 2012).

In sum, factors such as culture, personality traits, psychological characteristics, robust privacy assurance and policies, trust, health concerns, government regulation and the privacy calculus are commonplace in personal data literature, even if the topics are different, having been demonstrated as relevant for the study of attitudes and acceptance. However, not all the factors mentioned are of equal importance and not all of them are suited for the present study, some of them requiring careful adaptation. Institutional trust is thus adapted into institutional reputation and divided into company reputation (related to companies who use genetic data for marketing purposes) and data provider reputation (related to organizations that sell genetic data to third parties) to fully explain the relationships at work in the present research. This distinction is necessary to highlight the nuance between different institutions with different goals and separate roles in the process of genetic data handling, one acquiring and selling the data, the other only buying it for their use or reselling it. Thus, the following hypotheses are presented, based on the literature:

H3: Acceptance of the usage of genetic data for marketing purposes is positively related to perceived level of control of information

H4: Perceived privacy risk is negatively related to perceived level of regulation

H5: Perceived privacy risk is positively related to risk avoidance

H6: Perceived benefits are positively related to company reputation

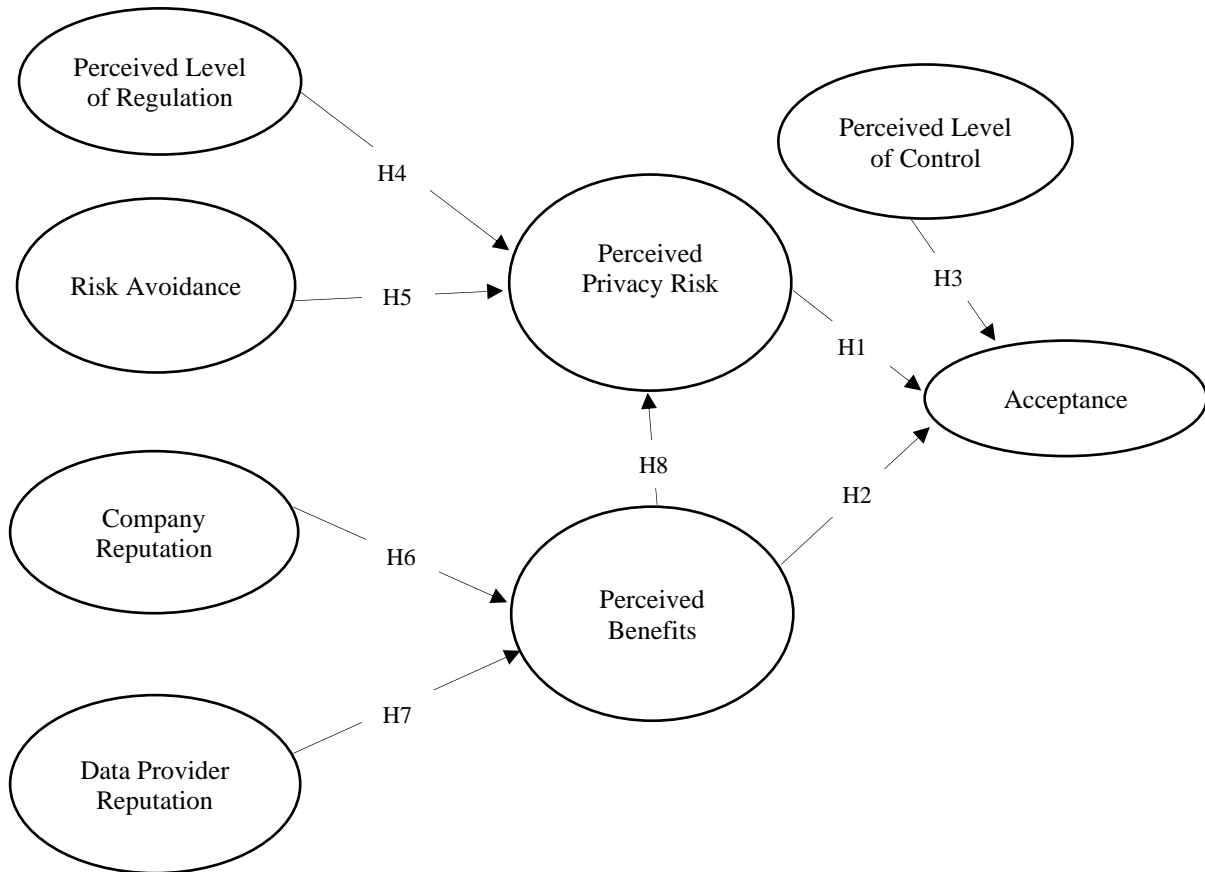
H7: Perceived benefits are positively related to data provider reputation

H8: Perceived privacy risk is negatively related to perceived benefits

2.8 Research model

Based on the literature review, the information collected, and the hypotheses developed based on them, the following research model was created to represent what this research proposes to study:

Figure 1 – Proposed research model



The above research model illustrates the relationships and variables that define this study. The goal of this investigation is to understand how these variables affect the acceptance of usage of genetic data for marketing purposes. Firstly, this is accomplished by using the privacy calculus, a relevant framework within personal data privacy literature that is key to understanding attitudes. Secondly, it's accomplished by complementing the privacy calculus theory with other variables that contribute significantly to either perceived privacy risk or perceived benefits, variables that are of key importance to genetic marketing specifically. Thirdly, by incorporating an additional variable, perceived level of control, that relates to acceptance and is derived from the theory of planned behavior, also key to comprehending behavioral attitudes in consumers.

3. Methodology

3.1 Sample and data collection

The present study surveys the general Portuguese population, conducting convenience sampling to collect the data by using the network of personal acquaintances of the author. The questionnaire was designed and conducted in Google Forms, shared via link with potential respondents, who subsequently reshared it with their own personal acquaintances. Furthermore, the link was also shared in Facebook groups and other social media channels. The survey itself is translated to Portuguese from the original English items, providing detailed explanations of the respective variables at the beginning of each section so respondents have a full understanding of the questions. Before launching the final version of the survey to the general population, a pre-test was conducted to improve it in terms of validity with a select group of representative individuals.

In total, 310 people responded to the questionnaire, of which 309 were valid, resulting in an effective response rate of 99%. Among these valid questionnaires, 65.4% of the respondents were women, 34% were men, 0.3% identified as another gender, while 0.3% would rather not say. Additional demographic information on the respondents is presented in Table 1.

Table 1 – Demographic information

<i>N</i> = 309	Demographic	%
Age	<18	1.6%
	18-29	46.6%
	30-49	33.3%
	50-65	12.7%
	>65	5.8%
Gender	Male	34%
	Female	65.4%
	Other	0.3%
	Rather not say	0.3%
Income	<1500	24.6%
	1500-2500	36.6%
	2500-5000	27.8%
	>5000	11%
Education	9 th grade	3.2%
	12 th grade	18.1%
	Bachelor's	50.8%
	Masters	23.1%
	PhD	2.9%
	Professional	1.6%
	Post-graduate	0.3%
Professional Situation	Student	28.5%
	Student-worker	14.6%
	Full-time	45.3%
	Part-time	2.9%
	Unemployed	2.6%
	Retired	6.1%

3.2 Measures and scales

The survey was developed based on questions and scales found in related literature that allowed for adequate measure of the variables in the research model. The questioners were subsequently adapted to fit the topic of research, while maintaining internal consistency in terms of logic and purpose.

All the scales in this study are seven-point Likert scales (1 = strongly disagree, 7 = strongly agree). A scale by Wirtz et al. (2007) measures perceived level of regulation. Another seven-point Likert scale by Dinev et al. (2012) measures perceived level of information control. A scale by Gao et al. (2012) captures respondent's level of risk avoidance. A scale by Suh & Han (2003) measures both data provider reputation and company reputation, creating a distinction between the two to obtain different perspectives with the same items. Another two scales by

Dinev et al. (2012) capture perceived benefits and perceived privacy risk. Another scale by Suh & Han (2003) measures acceptance of genetic marketing.

In terms of demographic variables, gender was measured between “male”, “female”, “other” and “rather not say”. Age was divided into five groups: under 18; 18 to 29; 30 to 49; 50 to 65; over 65. Education was measured and divided into seven groups, signifying the last level achieved: 9th grade; 12th grade; bachelor’s; masters; PhD; post-graduate; technical professional degree. Household income was divided into four groups, measured in euros: under 1500; 1500 to 2500; 2500 to 5000; above 5000. Lastly, professional situation was measured and divided into six groups, capturing respondent’s current professional status: student; student-worker; full-time worker; part-time worker; unemployed; retired.

In order to assure validity and reduce bias, the survey ensured participants that their responses were confidential and entirely anonymous. This step is relevant when collecting behavioral and attitudinal data from self-report questionnaires, due to an issue known as common method bias (Podsakoff et al., , 2003; Chang et al., 2010).

4. Results and discussion

The present analysis of the results uses a partial least square structural equation modelling (PLS-SEM) with the software SmartPLS 3 to test the model. Such a method of analysis (PLS-SEM) is considered adequate for this research due to the relatively complex nature of the model and its predictive research goal, to understand the individual constructs and the cause-effect relations among them (Chin, 1998; Hair et al., 2012; Sarstedt et al., 2014). This research evaluates the research model in two steps: the outer model (measurement model) and the inner model (structural model) (Henseler et al., 2015). The study then applies blindfolding and bootstrapping re-sampling with 5000 samples to test the hypothesis.

4.1. Outer Model

The first three aspects to consider when evaluating the measurement model are: internal consistency reliability; composite reliability; and convergent validity. Cronbach's alpha serves as one of the first steps to determine the internal reliability of the model, which should be above the recommended .70 for each construct (Hair et al, 2010). Similarly, in terms of composite reliability, outer loadings should also register above .70 and should be considered for removal when its deletion leads to an improvement in composite reliability (Nunnally & Bernstein, 1994; Hair et al, 2010). All outer loading indicators show composite reliability above .70, same for Cronbach's alpha, except for ACC2. This item was deleted, as eliminating it leads to an improvement in composite reliability of the construct, from .911 to .934. As for convergent validity, the average extracted variances (AVE) are above .50 for all constructs, which suggests that each of them has convergent validity (Urbach & Ahlemann, 2010; Hair et al, 2010). Table 2 demonstrates these results.

Table 2 - Reliability and validity test for the complete data

Constructs	Items	Outer Loadings	Cronbach's α	CR	AVE
Perceived Level of Regulation	PLR1	.888	.891	.924	.755
	PLR2	.904			
	PLR3	.932			
	PLR4	.738			
Perceived Level of Control	PLC1	.906	.948	.962	.865
	PLC2	.952			
	PLC3	.941			
	PLC4	.922			
Company Reputation	CR1	.804	.926	.942	.732
	CR2	.884			
	CR3	.853			
	CR4	.882			
	CR5	.802			
	CR6	.902			
Data Provider Reputation	DPR1	.850	.952	.962	.808
	DPR2	.937			
	DPR3	.894			
	DPR4	.927			
	DPR5	.853			
	DPR6	.927			
Risk Avoidance	RA1	.808	.743	.853	.659
	RA2	.771			
	RA3	.855			
Perceived Privacy Risk	PPR1	.890	.875	.914	.728
	PPR2	.899			
	PPR3	.803			
	PPR4	.815			
Perceived Benefits	PB1	.901	.874	.922	.799
	PB2	.873			
	PB3	.907			
Acceptance	ACC1	.898	.894	.934	.825
	ACC3	.937			
	ACC4	.889			

In terms of discriminant validity, for it to be established, the square roots of the AVE values for each construct should be greater than the correlation involving any of the other constructs, according to the Fornell-Larcker criterion (Henseler et al., 2015). As can be verified in Table 3, the square root of AVE values for all constructs is greater than the correlation with the other constructs, thus suggesting discriminant validity. Another way to assess discriminant validity is by the Heterotrait-Monotrait (HTMT) ratio of the correlations criterion., which are all below the recommended .850, suggesting satisfactory discriminant validity within the data (Henseler et al., 2015). These results are also present in Table 3, in parenthesis.

Table 3 – Fornell-Licker criterion analysis and HTMT ratios.

	ACC	CR	DPR	PB	PLC	PLR	PPR	RA
ACC	0.908							
CR	0.644 (0.705)	0.855						
DPR	0.613 (0.659)	0.779 (0.824)	0.899					
PB	0.714 (0.807)	0.512 (0.564)	0.484 (0.524)	0.894				
PLC	0.376 (0.404)	0.566 (0.602)	0.511 (0.539)	0.241 (0.262)	0.930			
PLR	0.320 (0.358)	0.323 (0.356)	0.338 (0.368)	0.213 (0.238)	0.261 (0.291)	0.869		
PPR	-0.308 (0.345)	-0.394 (0.437)	-0.380 (0.419)	-0.338 (0.378)	-0.172 (0.193)	-0.369 (0.406)	0.853	
RA	-0.247 (0.302)	-0.305 (0.354)	-0.280 (0.319)	-0.265 (0.323)	-0.254 (0.293)	-0.298 (0.355)	0.476 (0.573)	0.812

Notes: HTMT ratios are in parentheses. The diagonal elements in bold are the square roots of the variance between the constructs and their measures (AVE).

Additionally, it is also relevant to assess multicollinearity in the indicators. To this end, this study uses variance inflation factors (VIFs). All VIF values are <10, ranging from 1.243 to 6.051, which is considered acceptable in terms of concern for potential multicollinearity (Hair et al, 2010). These values can be observed in Table 4.

Table 4 – *Multicollinearity Statistics (VIF)*

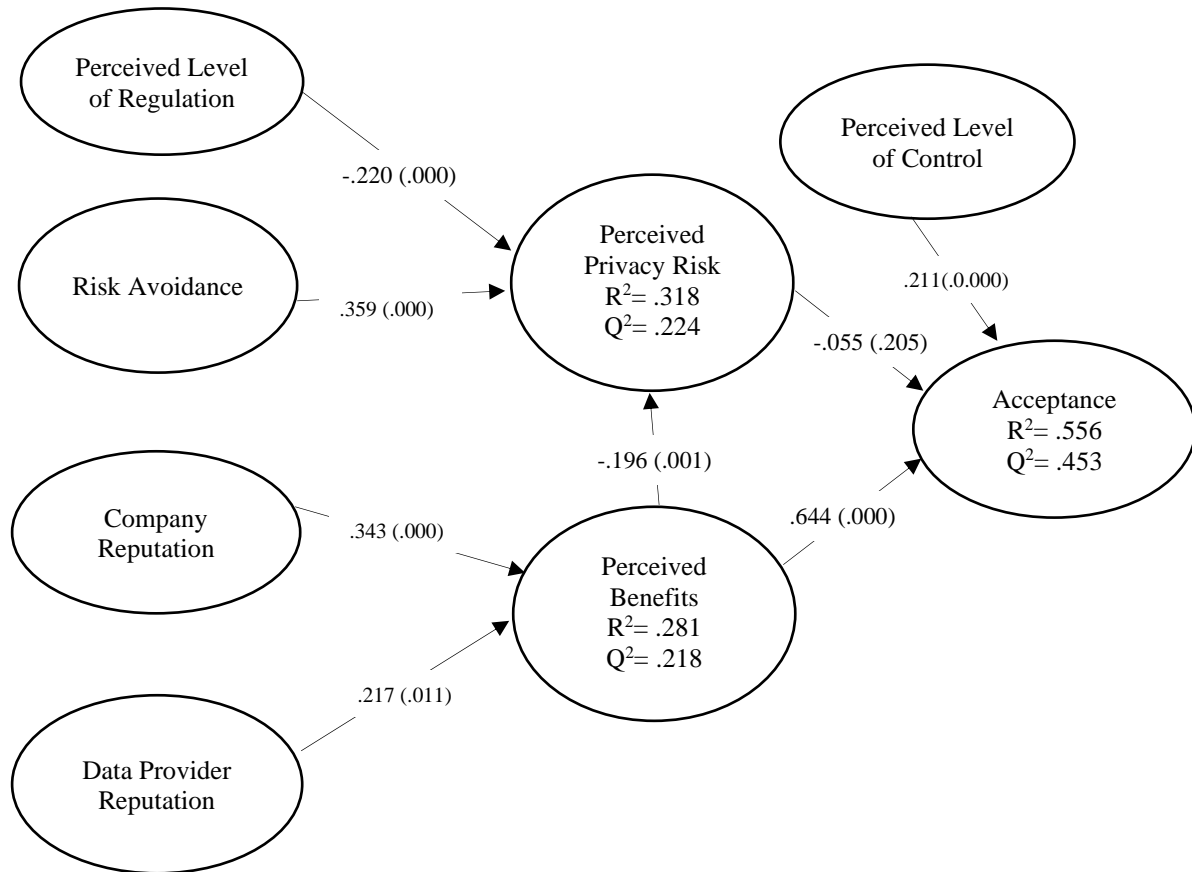
	VIF
ACC1	2.734
ACC3	3.608
ACC4	2.408
CR1	2.304
CR2	3.223
CR3	2.772
CR4	3.139
CR5	2.250
CR6	3.857
DPR1	3.037
DPR2	5.713
DPR3	3.813
DPR4	4.786
DPR5	2.918
DPR6	5.023
PB1	2.595
PB2	2.073
PB3	2.557
PLC1	3.621
PLC2	6.051
PLC3	4.887
PLC4	3.998
PLR1	2.665
PLR2	3.041
PLR3	3.906
PLR4	1.716
PPR1	3.038
PPR2	3.223
PPR3	1.970
PPR4	2.010
RA1	1.890
RA2	1.243
RA3	2.036

4.2. Inner Model

Starting the assessment of the inner model is an analysis of structural model fit, where Standardized Mean Root Residual (SRMR) equals 0.074, which falls within the recommended 0.08, allowing to conclude that the model proposed in the study fits the data well (Henseler et al., 2015).

Further evaluations of the structural model examine the R^2 estimates, Stone-Geisser's Q^2 value, effect size (f^2), path coefficients (β), and p -values, observed in detail in Figure 2 and Table 5.

Figure 2 – Research Model with PLS-algorithm and bootstrapping results



Note: *p*-values are inside the parenthesis

Table 5 – Structural Model Results

Hypothesized relationship	Proposed effect	Path coefficient	f ²	Results
PPR -> ACC	Negative	-.055	.006	H1: Not supported
PB -> ACC	Positive	.644***	.796	H2: Supported
PLC -> ACC	Positive	.211***	.094	H3: Supported
PLR -> PPR	Negative	-.220***	.063	H4: Supported
RA -> PPR	Positive	.359***	.164	H5: Supported
PB -> PPR	Negative	-.196**	.051	H8: Supported
CR -> PB	Positive	.343***	.064	H6: Supported
DPR -> PB	Positive	.217*	.026	H7: Supported

Note: ****p*<.001 ***p*<.01 **p*<.05

Note: PLR – Perceived Level of Regulation; RA – Risk Avoidance; PB – Perceived Benefits; CR – Company Reputation; DPR – Data Provider Reputation; PLC – Perceived Level of Control; PPR – Perceived Privacy Risk; ACC – Acceptance.

According to the results obtained, the model predicts a 55.6% of the variance in acceptance of the usage of genetic data for marketing purposes, 31.8% of the variance in

perceived privacy risk and 28.1% of the variance in perceived benefits, all of which indicate moderate prediction (Henseler et al., 2009).

Furthermore, in terms of effect size (f^2): perceived level of regulation and perceived benefits have a moderate effect size on perceived privacy risk at a structural level, while risk avoidance has a strong effect size on perceived privacy risk; company reputation and data provider reputation have moderate effect size on perceived benefits; perceived level of control of information has a moderate effect size on acceptance, while perceived privacy risk has a weak effect size on acceptance and perceived benefits has a strong effect size on acceptance. (Cohen, 1988).

Additionally, all the dependent's variables Stone-Geisser's Q2 are larger than zero, which further confirms the model's predictive validity (Henseler et al., 2009).

One of the proposed paths is not statistically significant, having a p value larger than .05. The path in question is the effect of perceived privacy risk on acceptance ($\beta = -.055$, $p = .205$). This means that the hypothesis H7 is not supported by the data.

4.3. Discussion

The results obtained in the present study, although of an exploratory nature, demonstrate the importance of certain factors in the acceptance of usage of genetic data for marketing purposes and the validity of research models used in studies on other kinds of personal data for better understanding this topic.

Most notably, this study demonstrated the significant positive influence of perceived benefits on acceptance, which is a common finding in privacy calculus research. In other words, levels of acceptance of usage of genetic data for marketing purposes increase when perceived benefits improve for consumers. Additionally, it also evidenced the important and positive relationship institutional reputation has on perceived benefits, allowing for the conclusion that an organization's perceived benefits increase with a better reputation in the eyes of consumers.

Another relevant result obtained from the research conducted in this study is the positive impact of perceived level of control over acceptance, confirming the theory of planned behavior (TPB) that suggests the connection between this variable and behavioral intention, a concept closely related to acceptance (Ajzen, 1991).

The psychological factor of risk avoidance was seen to contribute positively to perceived privacy risks, meaning that the greater the tendency of an individual to avoid risk the more they will perceive risks associated with the privacy calculus. Conversely, perceived level of regulation influences perceived privacy risk negatively. These two variables have an inverse

relationship, one that represents a phenomenon seen in related literature where the level of legislative protection regarding personal data privacy decreases how much risk consumers perceive in the act of sharing their information (Li et al., 2016).

The literature suggests perceived benefits has a negative and significant influence on perceived privacy risk, and that perceived privacy risk has a negative and significant effect on levels of acceptance (Li et al., 2016). The first result is verified by this study, demonstrating that increasing benefits has the consequence of decreasing perceived risk. However, this study is unable to verify the second result, with perceived privacy risk having an insignificant impact on acceptance, although still showing a negative sign. An explanation for this may be that it is possible that only extreme levels perceived privacy risk can have a significant effect over behavior and acceptance (Pentina et al., 2016).

5. Conclusions

5.1 Theoretical contributions

The present study attempts to establish a framework to understand acceptance of usage of genetic data for marketing purposes, using literature on other kinds of personal data to identify key factors of significant importance to that relationship. These have a diverse and broad origin and are pieced together as a whole because of the scarcity of literature on the topic of genetic marketing.

As discussed in the previous sections, this research presents results that confirm some of the hypothesized relationships, thus shedding light into a previously untouched subject, contributing to the nascent field of genetic marketing, answering the fundamental research question, and filling the chosen gap in the literature, out of the many possibilities in existence. This contribution comes in the form of identifying some of the factors that influence consumers acceptance of the usage of their genetic data for marketing purposes, such as the importance of perceived benefits in improving levels of acceptance and decreasing perceived privacy risk, institutional reputation as a driver of those perceived benefits, and the positive effect of perceived level of control over acceptance.

The novel nature of this research and field certainly suggests the need for further exploration of the validity and relevance of the analyzes variables, even of those carried over from related literature and having a significant impact in those contexts. This novelty may also impact the magnitude of the privacy risk individuals perceive, which means it may increase in the future as genetic marketing practices become more common knowledge and widespread.

5.2 Managerial contributions

The contributions presented in this study extend beyond a theoretical and academic level to a practical one that may be of interest for managers and organizations. However, due to the novelty of this topic, the scarcity of research and the fact that these practices are still at their early stages, practical contributions are of a limited and uncertain nature. Despite that, the findings obtained are concrete enough to be useful at any stage of development of genetic marketing, and stakeholders interested in investing in it can find a real value in them.

Firstly, this study demonstrates the positive influence perceived benefits have on the acceptance of usage of genetic data for marketing purposes. This significant finding suggests managers and organizations that seek to pursue genetic marketing should also invest in implementing benefits associated with their practices, as well as communicating these properly. Specifically, in terms of how these practices can improve products and services, increase

customization and product quality, and help consumers get the products they really want from companies. For instance, they may find healthcare products more suited for their conditions or see improvements in the experience provided by the entertainment industry, being able to engage with content tailored to their genetic profile. These improvements will subsequently be easily recognized as the benefits associated with genetic marketing.

Secondly, this research shows the important and positive role institutional reputation has on perceived benefits. This reputation is divided into two kinds: data provider reputation (of organizations that collect and sell genetic data); and company reputation (organizations that purchase the genetic data for marketing purposes). When each of these factors increase, so do the benefits the consumers perceive. This finding leads to the conclusion that companies interested in using genetic marketing should take care to cultivate their reputations, specifically in terms of being trustworthy in their promises and behaviors, especially related to consumers. They should also select genetic data providers that share these qualities, for if these have poor reputations this too will affect consumer's level of acceptance of genetic marketing practices.

Finally, another important managerial implication is the positive influence perceived level of control of information has on acceptance. This informs managers and organizations that they should invest in measures that nurture and improve consumers' levels of control of personal information, for this will directly impact their acceptance of the usage of that information for marketing purposes. These measures should be specifically concerned with how much control consumers have over the data companies' control, what kinds of data they collect, and what these institutions will do with said data. In practice, this may entail providing clear descriptions of what data is being stored, how it is being stored and collected, detailed information on how it is being used, while also having options for consumers to recover their data, just like many social networking websites do.

5.3 Limitations and future research

Despite the contributions this study makes for both theory and practice of genetic marketing, it also has some limitations. These in turn offer new opportunities for future research in several hypothetical avenues.

One limitation regards the kinds of variables being studied. Research on personal data privacy is varied and explores a myriad of factors, from several perspectives. This study borrowed relevant and important variables and applied them to a new context, but there are many other aspects that could also be explored, such as the impact of Big-five personality traits and other psychological factors. Additionally, this study is based on a privacy calculus

perspective, but there are other paths to explore that may further contribute to the literature on the acceptance of usage of genetic data for marketing purposes, such as paths focusing on affective states or neuromarketing. Other elements beyond acceptance of genetic marketing can also be researched. Due to the recency of this topic, there is a great variety of studies that can be conducted just by borrowing variables from related literature.

Another limitation of this study is regarding the sample of the survey, which focused only on a Portuguese population. This narrows the possibilities in terms of characteristics and environmental factors. To advance this field of study, other countries should be analyzed. It may be that culture is a relevant element to the behavior of acceptance, so studying and comparing different populations from multiple countries should shed light into the contribution of that variable and the differences among nations. Additionally, in terms of limitations regarding the sample, further investigation should be conducted in which participants can be separated according to if they ever shared their genetic data or not. Not including this element is a limiting factor as it leaves out an important piece of information about the subjects that can influence their perspectives and answers.

Other methods of research may also be employed in the burgeoning field of genetic marketing. The novelty of the topic means that common research methods can be easily implemented to find relevant and significant early results. Methods such as focus groups and interviews expand the scope and depth of the analysis and could be used to find much needed conclusions and insights. Some of these studies in personal data privacy may simply be adapted and utilized in this new context, if found to be relevant and applicable.

Lastly, the recency of genetic marketing practices is also a limiting factor. It limits the quantity and quality of these practices in the industry. And it limits the awareness consumers have of these developments. As this field matures and becomes more widespread, levels of concern among consumers may change as they become more aware of what genetic marketing is and how prevalent in society it is. And of how it impacts their lives. This presents another opportunity in terms of future research, as additional studies should be conducted as the role of the field on society and industry expands.

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7. Annexes

Table 6 – Path coefficients and p values of conceptual model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Q ²
CR -> PB	0.343	0.347	0.078	4.413	0.000	
DPR -> PB	0.217	0.215	0.084	2.592	0.010	
PB -> ACC	0.644	0.646	0.039	16.667	0.000	
PB -> PPR	-0.196	-0.194	0.058	3.385	0.001	
PLC -> ACC	0.211	0.210	0.048	4.394	0.000	
PLR -> PPR	-0.220	-0.224	0.057	3.878	0.000	
PPR -> ACC	-0.055	-0.055	0.044	1.249	0.212	
RA -> PPR	0.359	0.360	0.072	4.973	0.000	

Table 7 – Q² of dependent variables

	SSO	SSE	Q ² (=1-SSE/SSO)
ACC	927.000	507.474	0.453
CR	1854.000	1854.000	
DPR	1854.000	1854.000	
PB	927.000	725.006	0.218
PLC	1236.000	1236.000	
PLR	1236.000	1236.000	
PPR	1236.000	959.331	0.224
RA	927.000	927.000	

Table 8 – Effect size of conceptual model

	ACC	CR	DPR	PB	PLC	PLR	PPR	RA
ACC								
CR				0.064**				
DPR				0.026**				
PB	0.796***						0.051**	
PLC	0.094**							
PLR							0.063**	
PPR	0.006*							
RA							0.164***	

Notes: *weak Effect size, **moderate effect size, ***strong effect size

Exhibit 1 – Questionnaire (in Portuguese)



Aceitação de Marketing Genético

Este questionário existe no contexto de uma tese de mestrado que procura compreender o nível de aceitação relativamente a práticas de marketing genético.

Marketing genético é uma prática recente em que empresas adquirem dados genéticos da população, (com consentimento), usando-os para propósitos de marketing como: criação de perfis de consumidor detalhados; recomendações de produtos com base no historial genético do indivíduo; previsão do seu comportamento e necessidades futuras, entre outros.

O questionário levará cerca de 10 minutos a preencher e é totalmente anónimo, sendo que as respostas serão usadas exclusivamente para a respetiva tese.

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Questões Gerais

Em cada pergunta desta secção, escolha a opção que mais se adequa a si.

Idade *

- ☐ Menos de 18
- ☐ 18 a 29
- ☐ 30 a 49
- ☐ 50 a 65
- ☐ Mais de 65

Género *

- ☐ Masculino
- ☐ Feminino
- ☐ Prefiro não dizer
- ☐ Other: _____

Rendimento do Agregado Familiar (mensal) *

- ☐ Menos 1500
- ☐ 1500 a 2500
- ☐ 2500 a 5000
- ☐ Mais de 5000

Grau mais elevado de educação obtido *

- ☐ 9º ano
- ☐ 12º ano
- ☐ Licenciatura
- ☐ Mestrado
- ☐ Doutoramento
- ☐ Formação Profissional
- ☐ Other: _____

Situação Profissional *

- ☐ Estudante
- ☐ Trabalhador-estudante
- ☐ Trabalho a tempo inteiro
- ☐ Trabalho Part-time
- ☐ Desempregado
- ☐ Reformado

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Percepção do Nível de Regulação

Esta secção procura compreender a percepção que tem do nível de regulação, (governamental, legal, etc), do marketing genético, bem como a opinião pessoal sobre a mesma.

Devia haver regulações mais fortes do governo para me proteger do uso de dados genéticos para propósitos de marketing. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

As leis existentes em Portugal deviam ser melhoradas para me proteger do uso de dados genéticos para propósitos de marketing. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Devia haver leis internacionais mais estritas para me proteger do uso de dados genéticos para propósitos de marketing. *

1 2 3 4 5 6 7

Discordo Totalmente

☐☐☐☐☐☐☐

Concordo Totalmente

O governo não está a fazer o suficiente para garantir que os consumidores estão protegidos de violações da privacidade dos seus dados genéticos. *

1 2 3 4 5 6 7

Discordo Totalmente

☐☐☐☐☐☐☐

Concordo Totalmente

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Percepção do Nível de Controlo de Informação

Esta secção estuda a percepção que tem do controlo que pensa ter sobre a sua informação pessoal, neste caso sobre os seus dados genéticos.

Acho que tenho controlo sobre que informação genética é detida e partilhada pelas empresas. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Acredito que tenho controlo sobre como a minha informação genética é usada pelas empresas. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Acredito que tenho controlo sobre que tipo de informação genética é recolhida por empresas. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Acredito que consigo controlar a minha informação genética detida por empresas. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

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Reputação das Empresas

Esta secção procura compreender a opinião que tem sobre a reputação de empresas que usam dados genéticos para propósitos de marketing.

ATENÇÃO: esta secção não é sobre empresas que recolhem e vendem dados genéticos, apenas sobre aquelas que os compram para propósitos de marketing.

Exemplo: imagine que um laboratório obteve os seus dados genéticos após lá ter feito análises e vende esses dados a uma empresa de produtos de beleza. Esta secção preocupar-se-ia apenas com a empresa de produtos de beleza.

As empresas que compram dados genéticos para propósitos de marketing são de confiança. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Confio nos benefícios das decisões destas empresas. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Estas empresas são fieis às suas promessas e compromissos. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Estas empresas têm os melhores interesses dos consumidores em mente. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Estas empresas fariam o seu trabalho de forma correta mesmo que não fossem monitorizadas. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Eu confio nestas empresas. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

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Reputação dos Provedores de Dados

Esta secção procura compreender a opinião que tem sobre a reputação de empresas que recolhem e vendem dados genéticos, com consentimento, a outras empresas.

ATENÇÃO: esta secção é sobre empresas que recolhem e vendem dados genéticos, não sobre aquelas que os compram para propósitos de marketing.

Exemplo: imagine que um laboratório obteve os seus dados genéticos após lá ter feito análises e vende esses dados a uma empresa de produtos de beleza. Esta secção preocupar-se-ia apenas com o laboratório.

As empresas que recolhem e partilham dados genéticos com terceiros, (com consentimento), são de confiança. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Confo nos benefícios das decisões destas empresas. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Estas empresas são fieis às suas promessas e compromissos. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Estas empresas têm os melhores interesses dos consumidores em mente. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Estas empresas fariam o seu trabalho de forma correta mesmo que não fossem monitorizadas. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Eu confio nestas empresas. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

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Aversão ao Risco

Esta secção procura compreender o nível de aversão ao risco, um fator psicológico que faz com que um individuo esteja mais ou menos confortável em situações de risco.

Sou frequentemente relutante em dar a minha informação pessoal, (tal como nome ou endereço de e-mail), de forma a receber algo em troca que seja de valor para mim. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

É incómodo quando recebo mensagens aleatórias ou não-solicitadas de empresas ou organizações. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Sou frequentemente relutante em dar a minha informação pessoal, (tal como nome ou endereço e-mail), de forma a aceder a notícias ou informações em que estou interessado. *

1 2 3 4 5 6 7

Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

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Percepção de Risco de Privacidade

Esta secção procura compreender a percepção que tem sobre o risco de privacidade que incorreria ao providenciar os seus dados genéticos a empresas, num cenário hipotético.

Em geral, seria arriscado dar a minha informação genética. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Haveria elevado potencial para perda de privacidade associada a dar a minha informação genética. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

A informação genética poderia ser usada de forma inapropriada por terceiros. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Dar a minha informação genética a empresas envolveria problemas inesperados. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

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Perceção de Benefícios

Esta secção procura compreender a perceção que tem sobre o os benefícios de providenciar os seus dados genéticos a empresas.

Revelar a minha informação genética a empresas irá ajudar-me a obter informação/produtos/serviços que quero. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Preciso de dar a minha informação genética para poder receber exatamente o que quero das empresas. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

Acredito que como resultado de dar os meus dados genéticos, irei beneficiar de um serviço customizado e/ou produtos e informação de melhor qualidade. *

1 2 3 4 5 6 7

Discordo Totalmente

☐ ☐ ☐ ☐ ☐ ☐ ☐

Concordo Totalmente

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Aceitação

Esta secção procura compreender o nível de aceitação que tem face a práticas de marketing genético, ou seja, o quão aberto/a se sente relativamente a essas práticas.

Tenciono continuar a comprar a empresas que usam os meus dados genéticos para propósitos de marketing. *

1 2 3 4 5 6 7
Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

O meu atual comportamento de consumo perante empresas que usam os meus dados genéticos para propósitos de marketing irá continuar. *

1 2 3 4 5 6 7
Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Irei comprar frequentemente a empresas que usam os meus dados genéticos para propósitos de marketing. *

1 2 3 4 5 6 7
Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

Irei recomendar fortemente que outros comprem a empresas que usem dados genéticos para propósitos de marketing. *

1 2 3 4 5 6 7
Discordo Totalmente ☐ ☐ ☐ ☐ ☐ ☐ ☐ Concordo Totalmente

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